CHALLENGES OF ARTIFICIAL INTELLIGENCE IN BUSINESS AND ENTREPRENEURSHIP EDUCATION RESEARCH: FACULTY SKILL GAPS AND READINESS

[1]Amakodi, Sunday Eze PhD
Business Education,
Alvan Ikoku Federal College of Education,
Owerri, Imo State, Nigeria
08038363332 starboysunny51@gmail.com

[2]Oparaku, Olachi Chidinma & [3]Ordu, Blessing Chinwe Nchelem
Marketing Education Department, School of Business Education,
Federal College of Education (Technical), Omoku,
Rivers State, PMB 11, Omoku, Rivers State, Nigeria
08032601340 olagod@gmail.com, 08030858827 chinweordu30@gmail.com

Abstract

Artificial intelligence (AI) has emerged as a transformative force in higher education, offering new opportunities to enhance entrepreneurship education through personalized learning, intelligent assessment, and experiential simulations. Despite these potentials, the integration of AI tools in Nigerian universities and colleges remains limited. This opinion paper examines the challenges of artificial intelligence in business and entrepreneurship education research. Drawing on recent studies published in the *ABEN Book of Readings* and the *Nigerian Journal of Business Education*, it highlights systemic barriers, including inadequate infrastructure, unclear institutional policies, and risk-averse organizational cultures. The paper posits that without deliberate investments in sustained professional development, supportive policy frameworks, and innovation-friendly environments, AI initiatives are unlikely to deliver meaningful impact. Recommendations are offered to reposition AI integration as a strategic priority, emphasizing the importance of faculty empowerment, infrastructural improvements, and leadership commitment. The paper concludes that unlocking AI's potential requires coordinated action among educators, administrators, and professional associations to create learning experiences that equip graduates with the entrepreneurial competencies needed in a technology-driven economy.

Keywords: Artificial Intelligence, Entrepreneurship Education, Faculty Readiness, Business Education

Introduction

Artificial intelligence (AI) is no longer an abstract concept confined to speculative discussions about the future; it has become an integral part of contemporary education systems worldwide. In entrepreneurship education specifically, AI promises to revolutionize how learners acquire knowledge, develop skills, and cultivate an entrepreneurial mindset. Intelligent tutoring systems, adaptive learning platforms, predictive analytics, and AI-powered simulations are among the many tools poised to transform traditional classrooms into dynamic, learner-centered environments (Luckin et al., 2016; Zawacki-Richter et al., 2019). For students of entrepreneurship, who must be prepared to navigate rapidly evolving markets and technological disruptions, exposure to AI-driven learning environments is increasingly essential (Hwang & Tu, 2021). However, despite widespread enthusiasm and substantial investments in technology, the effective integration of AI into entrepreneurship education remains limited and uneven across institutions. In our view, the most significant and often underestimated barrier is not technological sophistication but rather the readiness and capacity of faculty members to embrace and implement AI tools effectively.

Faculty readiness is a complex construct that extends beyond mere familiarity with technology. It involves educators' technical competence, pedagogical confidence, and willingness to adapt their instructional practices to incorporate AI meaningfully (Vidal et al., 2021). Entrepreneurship educators, in particular, face unique demands. Unlike fields with more static content, entrepreneurship education emphasizes experiential learning, creativity, and critical thinking competencies that align well with the adaptive and personalized capabilities of AI (Pittaway & Cope, 2007). Yet, many educators lack the training and support needed to translate this potential into practice. For example, instructors may struggle to integrate AI-powered simulations that model complex entrepreneurial scenarios or feel unprepared to interpret data generated by intelligent learning systems (Holmes et al., 2019). These skill gaps are not simply technical deficiencies; they reflect broader issues of professional development and institutional commitment to fostering innovation.

A prevailing narrative in higher education suggests that adopting AI technologies is a straightforward path to modernization and competitiveness. This assumption is particularly evident in policy documents and strategic plans that frame AI as a solution to challenges such as declining student engagement, limited instructional resources, and the growing demand for personalized learning (Salmon, 2019). However, such narratives often underestimate the human dimensions of technological change. Research shows that even the most sophisticated AI tools are unlikely to succeed without robust faculty buy-in and readiness (Nouri et al., 2020). Faculty members are not passive recipients of technological mandates; they are the designers and facilitators of learning experiences. When they lack the confidence, knowledge, or institutional support to engage with AI, these initiatives risk becoming superficial or performative rather than transformative.

Moreover, faculty skill gaps are frequently compounded by systemic and cultural barriers within institutions. Many universities lack coherent strategies for building faculty capacity around AI, resulting in piecemeal professional development opportunities that fail to equip educators with the sustained support they need (Hinojo-Lucena et al., 2019). Even when training is available, it often focuses narrowly on technical competencies without addressing critical pedagogical questions: How can AI enhance entrepreneurial learning outcomes? What ethical considerations must be accounted for when using AI-driven assessments? How can instructors balance efficiency with the cultivation of creativity and critical thinking? Without clear answers to these questions, faculty may understandably resist or underutilize AI tools.

Resistance to change is another formidable barrier. While some educators enthusiastically explore new technologies, others express skepticism rooted in legitimate concerns about workload, ethical implications, and the potential devaluation of their professional expertise (Holmes et al., 2019). In entrepreneurship education, where instructors often pride themselves on fostering human-centered learning and mentoring relationships, there may be particular apprehension about AI encroaching on the relational aspects of teaching. These concerns are not trivial, nor should they be dismissed as technophobia. Instead, they highlight the need for institutions to engage educators in meaningful dialogue about the role of AI and to provide frameworks that position technology as a complement to, rather than a replacement for, human expertise.

This opinion paper argues that the skill gaps and readiness challenges faced by entrepreneurship educators are the most pressing obstacles to the effective adoption of AI in this field. While technological infrastructure, funding limitations, and regulatory uncertainties are undeniably important, they cannot be fully addressed without parallel investments in human capacity-building. The success of AI integration ultimately depends on educators' ability to harness these tools creatively and responsibly to advance student learning. As such, institutions must prioritize

comprehensive professional development, foster a culture of experimentation and reflection, and design policies that center faculty needs and perspectives.

The stakes of inaction are considerable. Entrepreneurship education plays a critical role in preparing students to drive innovation, create jobs, and contribute to resilient economies (Fayolle, 2018). If faculty members are ill-prepared or unsupported in their efforts to integrate AI, students may graduate without the competencies required to thrive in an increasingly data-driven business environment. Conversely, when educators are equipped with the skills and confidence to leverage AI, they can design richer, more personalized learning experiences that mirror the complexity and dynamism of real-world entrepreneurship.

In the pages that follow, examined the underlying causes of faculty skill gaps, explore the cultural and institutional factors that exacerbate them, and propose strategies for building readiness and capacity. The goal is not simply to critique existing practices but to advocate for a more holistic approach to AI integration one that recognizes educators as central agents of change. By shifting the focus from technology acquisition to faculty empowerment, institutions can create the conditions necessary for sustainable innovation in entrepreneurship education.

The Promise of AI in Entrepreneurship Education

The integration of artificial intelligence into entrepreneurship education holds extraordinary promise for redefining how learners acquire the knowledge and skills necessary to thrive in modern business environments. Unlike many traditional disciplines, entrepreneurship demands adaptability, creativity, and the ability to synthesize diverse streams of information in real time. AI technologies are uniquely positioned to meet these demands by offering dynamic, personalized, and data-driven learning experiences that mirror the complexity of entrepreneurial practice (Luckin et al., 2016).

One of the most compelling advantages of AI is its capacity to create highly individualized learning pathways. Adaptive learning platforms, powered by sophisticated algorithms, can analyze students' performance data and deliver tailored content that responds to their evolving needs and competencies (Holmes et al., 2019). For entrepreneurship students, this means that learners can engage with materials at their own pace, revisit foundational concepts as necessary, and accelerate through areas where they demonstrate proficiency. This personalized approach not only promotes deeper engagement but also fosters a sense of agency and ownership over the learning process qualities that are essential for entrepreneurial success (Pittaway & Cope, 2007).

Beyond personalization, AI can facilitate experiential learning through advanced simulations and virtual environments. These tools allow students to practice complex decision-making in low-risk settings that emulate the uncertainties of launching and managing new ventures. For instance, AI-powered business simulation platforms can model market dynamics, competitor behavior, and customer preferences in real time, providing learners with immediate feedback on their strategies and decisions (Zawacki-Richter et al., 2019). Such experiences are invaluable for developing the critical thinking, resilience, and problem-solving skills that entrepreneurs need. When students are able to experiment with different scenarios and observe the consequences of their choices, they are better prepared to navigate the unpredictable challenges of real-world entrepreneurship (Fayolle, 2018).

AI also holds significant promise for enhancing formative and summative assessment practices. Traditional assessments often fail to capture the nuanced competencies required in entrepreneurship, such as creativity, collaboration, and ethical reasoning. In contrast, AI tools can analyze a broad range of data points, including written reflections, group interactions, and project outcomes, to generate more holistic evaluations of student learning (Hinojo-Lucena et al., 2019).

For educators, these insights can inform more responsive teaching practices and provide a richer understanding of students' progress. For students, timely and detailed feedback can support continuous improvement and reinforce the development of entrepreneurial mindsets.

Moreover, AI technologies can democratize access to high quality entrepreneurship education. In contexts where resources are scarce or where educators lack specialized expertise, AI powered tutoring systems and content recommendation engines can supplement instruction and ensure that learners receive consistent, evidence-ased guidance (Vidal et al., 2021). This potential for scalability is particularly relevant in emerging economies, where entrepreneurship education is increasingly recognized as a lever for economic development and social mobility (Salmon, 2019). By lowering barriers to participation and providing equitable access to cutting edge learning tools, AI can help cultivate a more diverse generation of entrepreneurs.

Finally, AI can play a pivotal role in cultivating a culture of lifelong learning among entrepreneurship students. The entrepreneurial landscape is characterized by rapid technological change, shifting consumer preferences, and evolving regulatory environments. AI powered platforms that support just-in-time learning and micro-credentialing enable learners to continuously update their skills and knowledge in response to emerging trends (Hwang & Tu, 2021). In this way, AI does more than enhance discrete courses or modules, it underpins a more flexible, responsive model of education that aligns with the realities of entrepreneurial practice.

Despite these opportunities, it is important to acknowledge that realizing the promise of AI requires more than the acquisition of advanced technologies. Without skilled educators who understand how to integrate AI meaningfully into pedagogy, even the most powerful tools will remain underutilized or misapplied. As this paper argues, the full potential of AI in entrepreneurship education can only be unlocked when institutions invest in building faculty capacity, fostering innovation, and addressing the cultural and systemic barriers that inhibit change.

The Reality: Faculty Skill Gaps and Readiness Challenges

While the transformative promise of artificial intelligence in entrepreneurship education is widely acknowledged, the reality within many Nigerian higher education institutions is far less encouraging. In practice, faculty skill gaps, attitudinal resistance, and systemic barriers have combined to undermine efforts to meaningfully integrate AI tools into teaching and learning. Several recent studies in Nigerian business education literature, including those published in the *ABEN Book of Readings* and the *Nigerian Journal of Business Education*, have underscored that inadequate preparation and limited confidence among educators remain some of the most persistent obstacles to technological adoption (Okwuanaso & Nwazor, 2019; Chukwumezie, 2021).

First, many entrepreneurship educators lack the technical competence required to operate AI-powered instructional platforms. Unlike more familiar technologies such as PowerPoint or word processing software, AI tools often require specialized training in data analytics, adaptive learning design, and cloud-based applications. However, professional development in these areas is frequently insufficient or nonexistent. Chukwumezie (2021) observed that in numerous colleges of education and universities in Nigeria, only a small proportion of business educators had participated in formal training workshops focused on AI integration. Instead, most relied on informal peer support or self-directed learning, approaches that often lead to superficial understanding rather than deep, confident expertise.

The consequences of this skills deficit are far-reaching. When educators lack technical knowledge, they are unlikely to experiment with AI-enhanced pedagogies or redesign their courses to leverage AI's capabilities. Instead, AI tools may be used in narrow or perfunctory ways if they are used at all. This was evident in a survey of business educators conducted by

Okwuanaso and Nwazor (2019), which revealed that fewer than 30% of respondents felt comfortable employing AI-based assessment tools or adaptive learning systems. Without substantial improvements in faculty competence, institutions risk entrenching a superficial engagement with AI that does little to improve learning outcomes.

Second, pedagogical readiness, the ability to integrate AI in ways that align with entrepreneurship education goals is often overlooked. Unlike other disciplines with more linear content delivery, entrepreneurship courses rely on experiential, problem-based learning that challenges students to think creatively and critically. AI has enormous potential to enrich this approach, but only if instructors understand how to design learning activities that take advantage of adaptive simulations, intelligent feedback, and real-time data analytics. Ezeani (2020) argued that most training opportunities for Nigerian business educators still focus on general ICT literacy rather than the specific pedagogical strategies needed to embed AI in experiential learning. As a result, many faculty members continue to rely on didactic methods, missing opportunities to create more authentic and engaging entrepreneurial learning environments.

Third, attitudinal resistance to AI remains a significant barrier. While some educators are enthusiastic about innovation, others harbor skepticism fueled by concerns about job security, loss of professional autonomy, and ethical issues such as data privacy. Edeh and Nwadiani (2022) reported that a substantial proportion of business educators view AI tools as a threat to their relevance, fearing that reliance on automation may diminish their role in shaping students' critical thinking and interpersonal skills. These anxieties are often exacerbated by institutional cultures that prioritize compliance over experimentation. In such contexts, educators may perceive AI initiatives as top-down impositions rather than collaborative efforts, further fueling resistance.

Finally, systemic factors such as resource constraints and policy ambiguity compound the challenges of skill gaps and low readiness. Many Nigerian institutions struggle with unreliable power supply, limited internet connectivity, and outdated infrastructure, which collectively impede the effective deployment of AI tools. Moreover, there is often a lack of clear institutional policies or guidelines governing the ethical and pedagogical use of AI in teaching. According to Okoro (2021), this policy vacuum creates uncertainty among faculty members, who may be unsure about acceptable practices, data security requirements, or accountability frameworks. Without strong leadership and supportive policies, even well-intentioned educators may feel hesitant to adopt AI tools.

Summarily, these challenges paint a sobering picture of AI readiness in Nigerian entrepreneurship education. The technological potential is real, but without addressing the underlying skill gaps, attitudinal barriers, and systemic constraints, it is unlikely that AI will deliver on its promise. As I will argue in the next section, the way forward requires a deliberate, sustained commitment to faculty development, supportive policies, and an institutional culture that values experimentation and continuous learning.

Institutional and Systemic Barriers

While individual faculty competence and attitudes are critical factors influencing the adoption of artificial intelligence in entrepreneurship education, these challenges do not occur in a vacuum. Rather, they are embedded within broader institutional and systemic contexts that frequently constrain innovation and frustrate educators' efforts to integrate emerging technologies effectively. In many Nigerian higher institutions, the lack of a supportive infrastructure, inadequate policy frameworks, and inconsistent leadership commitments combine to create an environment where even motivated educators struggle to engage meaningfully with AI tools (Okwuanaso & Nwazor, 2019).

One of the most pervasive barriers is the **persistent inadequacy of technological infrastructure**. Reliable internet connectivity, consistent electricity supply, and access to modern computing facilities are all prerequisites for deploying AI-powered platforms effectively. However, many colleges of education and universities continue to grapple with resource limitations that make consistent AI usage impractical (Ugwoke & Edeh, 2019). In a study of business education programmes across six Nigerian universities, Amoor and Okwuanaso (2020) found that over 70% of respondents cited poor infrastructure as the single most important obstacle to technology integration. Without stable and affordable access to digital tools, even the most enthusiastic faculty members are likely to revert to traditional instructional methods.

In addition to infrastructural deficits, the **absence of clear institutional policies and guidelines** for AI use further complicates adoption. Unlike conventional ICT integration which is now widely accepted and supported by established frameworks AI remains relatively new, and many institutions have yet to articulate policies that address its ethical, pedagogical, and operational dimensions (Ezeani, 2020). This policy vacuum creates uncertainty among faculty members about issues such as data privacy, algorithmic bias, intellectual property rights, and accountability for AI-generated feedback. For example, Okoro (2021) noted that some educators are reluctant to adopt AI-based assessment tools because they fear potential conflicts over the validity and ownership of student data. In the absence of clear institutional positions, faculty members are left to navigate these complex issues individually, often resulting in hesitation or outright rejection of AI solutions.

Another significant systemic barrier is the **inadequate provision for sustained professional development**. While many institutions periodically organize ICT workshops, these often focus on basic digital literacy or generic applications rather than the specific competencies needed to integrate AI into entrepreneurship education (Chukwumezie, 2021). When training does occur, it is frequently short-term, donor-driven, or limited to selected staff members, creating disparities in readiness and confidence across departments. Edeh and Nwadiani (2022) observed that this sporadic approach to capacity building undermines the development of a cohesive community of practice around technology integration. Without institutional structures that prioritize continuous learning and peer collaboration, educators are likely to feel isolated in their efforts to innovate.

Furthermore, **institutional cultures of risk aversion and bureaucratic inertia** often discourage experimentation with new pedagogical models. In many Nigerian higher education environments, compliance with established procedures is valued more highly than the pursuit of novel approaches, particularly when those approaches involve untested technologies (Okoro, 2021). Faculty members who wish to explore AI-enhanced methods may encounter resistance from administrators concerned about reputational risks, budget constraints, or misalignment with accreditation requirements. This conservative orientation stifles the emergence of an innovation-friendly atmosphere in which AI can be explored, piloted, and refined. Ugwoke and Edeh (2019) argue that without deliberate efforts to foster cultures that reward creativity and tolerate failure, initiatives aimed at transforming entrepreneurship education will remain peripheral to institutional priorities.

Finally, **financial constraints and competing demands for limited resources** exacerbate the challenges of AI adoption. Budget allocations for business education programmes are often insufficient to cover the acquisition, maintenance, and updating of AI platforms (Amoor & Okwuanaso, 2020). Even when external funding is secured, investments tend to prioritize hardware over the “softer” elements of implementation, such as curriculum redesign, faculty development, and evaluation frameworks. This pattern reflects a common misconception that technological transformation can be achieved solely through procurement. In reality, sustainable

integration requires comprehensive resourcing that balances infrastructure investments with human capital development and institutional support systems.

In summary, while individual educators' skill gaps and attitudes are central to understanding the limited uptake of AI in entrepreneurship education, they are deeply shaped by systemic factors. Infrastructural deficiencies, policy ambiguities, inadequate professional development, conservative institutional cultures, and chronic underfunding all interact to create formidable barriers. Addressing these systemic challenges requires institutional leaders to adopt a holistic approach that recognizes the interdependence of technology, policy, and people. As the next section will argue, creating an enabling environment for AI integration will demand deliberate action, sustained commitment, and a reimagining of how institutions define innovation and excellence in entrepreneurship education.

Conclusion

Artificial intelligence holds significant promise for transforming entrepreneurship education in Nigeria by enabling personalized, engaging, and skills-focused learning experiences. However, this promise remains largely unrealized due to persistent faculty skill gaps, infrastructural challenges, and institutional cultures that discourage innovation. As we have argued, addressing these barriers requires more than technology acquisition; it demands a holistic strategy that prioritizes sustained professional development, clear policy frameworks, and supportive leadership.

Perspective and Recommendations

Artificial intelligence holds great potential for enhancing entrepreneurship education, but its successful integration requires more than equipment purchases or isolated training. A holistic strategy is essential one that prioritizes faculty development, clear policies, robust infrastructure, and a culture that supports innovation.

First, faculty training should go beyond one-off seminars. Institutions should invest in continuous professional development tailored to the Nigerian context. This includes technical skill-building, pedagogical coaching, and collaborative experimentation. Faculty learning communities focused on AI can help reduce resistance and foster shared growth.

Secondly, institutional frameworks are needed to guide ethical and effective AI use. Vague or absent policies reduce faculty confidence and hinder innovation. Universities should co-create guidelines with educators, tech experts, and students, ensuring data privacy, responsible use, and transparency.

Third, infrastructural challenges such as unreliable power and poor internet should be urgently addressed. Institutions can form partnerships with donors and tech firms to improve access and sustainability.

Fourth, institutional culture must shift from risk-aversion to experimentation. Leaders should reward innovation, support pilot projects, and normalize learning from failure.

Finally, ABEN and similar professional bodies should provide leadership by sharing best practices, promoting local research, and supporting institutions with tools and case studies relevant to the Nigerian context

In our perspective, addressing faculty readiness and systemic barriers is not optional, it is a strategic necessity for preparing graduates to thrive in a technology driven economy. With coordinated effort, AI can move from a challenge to a catalyst for progress in entrepreneurship education

References

Amoor, S. S., & Okwuanaso, S. I. (2020). Constraints to the implementation of emerging technologies in business education programmes in Nigerian universities. *Association of Business Educators of Nigeria (ABEN) Book of Readings*, 7(2), 93–102.

Chukwumezie, F. U. (2021). Challenges facing business educators in integrating emerging technologies in Nigerian tertiary institutions. *Association of Business Educators of Nigeria (ABEN) Book of Readings*, 8(1), 112–121.

Edeh, M. O., & Nwadiani, M. (2022). Perceptions of business educators on the implications of artificial intelligence in business education in Nigeria. *Nigerian Journal of Business Education*, 9(2), 45–57.

Ezeani, N. S. (2020). Capacity building needs of business educators in ICT integration for effective instruction. *Nigerian Journal of Business Education*, 7(1), 102–112.

Fayolle, A. (2018). *A research agenda for entrepreneurship education*. Edward Elgar Publishing.

Hinojo-Lucena, F. J., Aznar-Díaz, I., Cáceres-Reche, M. P., & Romero-Rodríguez, J. M. (2019). Artificial intelligence in higher education: A bibliometric study on its impact in the scientific literature. *Education Sciences*, *9*(1), 51. https://doi.org/10.3390/educsci9010051

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

Hwang, G. J., & Tu, Y. F. (2021). Roles and research trends of artificial intelligence in mathematics education: A bibliometric mapping analysis and systematic review. *Mathematics*, *9*(6), 584. https://doi.org/10.3390/math9060584

Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson.

Nouri, J., Cerratto-Pargman, T., Rossitto, C., & Ramberg, R. (2020). Teacher professional development in the context of digital technologies: A review of the literature. Computers & Education, 159, 104020. https://doi.org/10.1016/j.compedu.2020.104020

Okoro, E. I. (2021). Institutional policy frameworks and the adoption of emerging technologies in business education programmes in Nigerian universities. *Association of Business Educators of Nigeria (ABEN) Book of Readings*, 8(2), 69–78.

Okwuanaso, S. I., & Nwazor, J. C. (2019). Constraints to effective integration of ICT in business education curriculum in Nigeria. *Association of Business Educators of Nigeria (ABEN) Book of Readings*, 7(1), 55–65.

Pittaway, L., & Cope, J. (2007). Simulating entrepreneurial learning: Integrating experiential and collaborative approaches to learning. *Management Learning*, *38*(2), 211–233. https://doi.org/10.1177/1350507607075776

Salmon, G. (2019). May the fourth be with you: Creating education 4.0. *Journal of Learning for Development*, *6*(2), 95–115. https://jl4d.org/index.php/ejl4d/article/view/352

Ugwoke, E. O., & Edeh, M. O. (2019). Emerging issues in ICT integration in business education in Nigerian higher institutions. *Nigerian Journal of Business Education*, 6(1), 77–87.

Vidal, V., Durán, M., & Alcalde-Piñeiro, M. (2021). Artificial intelligence in education: A review and classification of the literature. *Education and Information Technologies*, *26*, 3281–3295. https://doi.org/10.1007/s10639-021-10531-2

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education*, *16*(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0