

The role of business education in shaping AI-driven entrepreneurs of the future in Nigeria


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ARTICLE INFO	Abstract
<p>Keywords: <i>Business Education, Artificial Intelligence, Entrepreneurship.</i></p> <p>©2025 Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International</p> 	<p><i>This paper explores the role of business education in shaping AI-driven entrepreneurs of the future in Nigeria. In view of the growing impact of artificial intelligence (AI) on entrepreneurship and the evolving demands of the global economy, the paper emphasizes the need to reposition business education as a foundation for nurturing innovative, technologically competent entrepreneurs. The primary objective is to promote a reformed educational model that integrates AI literacy with entrepreneurial development to address Nigeria's youth unemployment and digital skills gap. Key themes discussed include the intersection of business education, AI, and entrepreneurship, particularly how their integration can foster creativity, problem-solving, and economic relevance. The paper raises concerns about outdated curricula, limited access to AI resources, and insufficient institutional readiness. It advocates for proactive reforms such as curriculum modernization, faculty training, partnerships with industry, and establishment of AI-driven learning environments. Recommendations focus on embedding AI-related content into business education programs, promoting hands-on experiences through innovation hubs, and encouraging government and private sector collaboration. The paper concludes by affirming that a restructured business education system is essential for equipping Nigerian students with the tools to become competitive, AI-enabled entrepreneurs in a digitally transforming world.</i></p>

Introduction

The 21st-century global economy is being radically reshaped by technological innovations, with Artificial Intelligence (AI) emerging as one of the most transformative forces across all sectors. This evolution has significant implications for business education, particularly in a developing context like Nigeria, where youth entrepreneurship is increasingly seen as a pathway to economic revitalization. Business education, by design, equips individuals with essential managerial, financial, and innovative skills to create and sustain enterprises. However, the emergence of AI tools, platforms, and thinking systems now demands a reorientation of traditional business curricula to align with the needs of a digitally driven entrepreneurial future (OECD, 2023; World Economic Forum, 2022). Artificial Intelligence offers unprecedented capabilities such as automation, predictive analytics, virtual assistance, and intelligent decision-making that can be harnessed by entrepreneurs to improve efficiency, reach markets, and personalize services (McKinsey & Company, 2021). For Nigerian business education to remain relevant and transformative, it must evolve beyond theoretical instruction and integrate AI competencies such as data interpretation, algorithmic thinking, and ethical use of AI technologies (Uzonwanne, 2020). This shift is essential if the country is to produce AI-savvy entrepreneurs who can navigate global markets and contribute meaningfully to national development.

This paper critically explores the pivotal role of business education in shaping AI-driven entrepreneurs in Nigeria. It reflects on how educational institutions can strategically incorporate AI into entrepreneurial learning, the potential benefits for learners and society, and the inherent challenges that must be addressed. The motivation for this discourse stems from the visible gap between the rising potential of AI and the limited incorporation of such tools in Nigeria's business education frameworks. Many institutions still rely heavily on traditional pedagogies, with minimal exposure to digital tools that drive innovation and scalability in modern business contexts (Adebayo & Ojo, 2021). Without intentional reforms, Nigerian graduates may be ill-prepared to compete in an AI-influenced entrepreneurial landscape.

Moreover, there are contextual challenges such as digital infrastructure deficits, limited faculty expertise in AI, and socio-economic inequalities that restrict access to technology challenges that could widen the digital divide if unaddressed (Nwankwo & Yusuf, 2022). Thus, it becomes imperative to examine not only the enabling role of business education but also the structural reforms required to make AI adoption equitable and sustainable. It also argues that business education in Nigeria must serve as a catalyst for producing AI-literate entrepreneurs who are empowered to create jobs, solve local problems, and participate competitively in the global innovation ecosystem. Through strategic curriculum design, stakeholder partnerships, and institutional investment in AI learning tools, business education can become the bridge that connects entrepreneurial ambition with technological empowerment.

Concept of business education

Business education encompasses structured teaching and learning activities aimed at equipping learners with the theoretical knowledge, practical skills, and values necessary for effective participation in commercial, organizational, and entrepreneurial endeavours (World Bank, 2018; UNESCO, 2015). It spans a continuum from secondary-level vocational courses to postgraduate MBAs and executive programs, integrating disciplines such as management theory, accounting, finance, marketing, human resource management, and operations (Drucker, 2007; Hisrich, Peters, & Shepherd, 2017). Crucially, modern business education also embeds experiential learning through case studies, simulations, internships, and live projects to ensure that learners can apply concepts in real-world settings (Kolb, 1984; Mintzberg, 2004).

Roles and functions of business education

1. **Knowledge transfer and analytical competence:** Business education delivers foundational theories (e.g., Porter's Five Forces, Kotler's Marketing Mix) and quantitative tools (e.g., financial modeling, statistical analysis) enabling students to diagnose organizational problems and develop strategic solutions (Porter, 1980; Kotler & Keller, 2016).
2. **Skill development:** Beyond theory, it cultivates critical "hard" skills (e.g., spreadsheet modeling, market research techniques) and "soft" skills such as leadership, communication, teamwork, and ethical reasoning (Cappelli, 2015; Weitzner & Woods, 2018). These competencies are validated through assessments like business simulations and group projects (Kolb, 1984).
3. **Entrepreneurial mindset formation:** By teaching opportunity recognition, resource mobilization, and business planning, business education nurtures an entrepreneurial orientation characterized by risk tolerance, proactivity, and innovation (Hisrich et al., 2017; Fayolle & Gailly, 2015). Incubators and accelerator partnerships further strengthen this orientation (European Commission, 2012).

4. **Ethical and Sustainable Decision-Making:** Contemporary programs integrate business ethics, corporate social responsibility, and sustainability frameworks to guide responsible leadership in a global context (Weitzner & Woods, 2018; Elkington, 1997).
5. **Facilitating lifelong learning and adaptability:** In a rapidly changing business landscape, education instills a metacognitive orientation encouraging continuous self-directed learning, reflection, and adaptation to emerging technologies and market trends (World Bank, 2018).

Advantages of business education

1. **Enhanced Employability and Career Progression:** Graduates with business education credentials enjoy higher placement rates, faster career advancement, and greater earning potential compared to non-business peers (Gleason, 2019).
2. **Economic development and innovation:** A skilled business workforce drives productivity gains, spurs SME growth, and fosters innovation ecosystems, contributing to broader socio-economic development (Hisrich et al., 2017; World Bank, 2018).
3. **Entrepreneurial success rates;** Research indicates that entrepreneurs with formal business training launch more sustainable ventures, demonstrate superior financial management, and achieve higher survival rates (Robinson & Sexton, 1994; Fayolle & Gailly, 2015).
4. **Global Competitiveness:** Business education's emphasis on intercultural management, international finance, and global marketing equips learners to operate effectively in cross-border contexts (Knight, 2004).

Challenges of business education

1. **Curricular obsolescence:** Rapid technological and market changes can render curricula outdated; institutions must invest in continuous curriculum review to include emerging topics like AI, blockchain, and data analytics (Oke & Adeyemi, 2021; OECD, 2023).
2. **Resource and faculty constraints:** Particularly in developing regions, limited access to industry-standard software, case libraries, and qualified faculty impedes effective delivery of practical learning experiences (UNESCO, 2015; Nwosu & Olanrewaju, 2021).
3. **Theory practice gap:** Overemphasis on lecture-based instruction without sufficient experiential components (e.g., capstone projects, live consulting) may leave graduates underprepared for complex, fluid business challenges (Kolb, 1984; Mintzberg, 2004).
4. **Equity and access issues:** High tuition fees, geographic maldistribution of quality institutions, and socio-economic barriers can restrict access to business education for marginalized groups, perpetuating inequality (Weitzner & Woods, 2018; UNESCO, 2015).
5. **Resistance to pedagogical innovation:** Academic inertia and reluctance to adopt novel teaching methods (e.g., flipped classrooms, AI-driven learning analytics) can slow modernization efforts (European Commission, 2012).

Conceptual foundations of artificial intelligence

Artificial Intelligence (AI) refers broadly to computational systems that emulate human cognitive processes such as perception, reasoning, learning, and decision-making using algorithms and data (Russell & Norvig, 2021). Early symbolic approaches framed AI as rule-based expert systems, capturing human expertise in if-then statements (Giarratano & Riley, 2005). With the advent of machine learning, AI shifted toward statistical pattern recognition, where algorithms infer predictive models from large datasets without explicit programming (Jordan & Mitchell, 2015). More recently, deep learning using multi-layered neural networks has enabled breakthroughs in image recognition, natural language processing (NLP), and autonomous control (LeCun, Bengio, & Hinton, 2015). Thus, AI today encompasses a spectrum of techniques from decision trees and support vector

machines to convolution neural networks and transformer architectures each with distinct strengths in handling structured or unstructured data (Goodfellow, Bengio, & Courville, 2016).

Importantly, AI is not a monolithic technology but an ecosystem of interrelated capabilities. AI is the ability of a system to correctly interpret external data, to learn from such data, and to use those learning to achieve specific goals. This integrative view underscores three pillars: (a) data ingestion and perception, (b) knowledge representation and reasoning, and (c) adaptive learning. In business contexts, these pillars translate into applications such as customer sentiment analysis (perception), intelligent decision support (reasoning), and demand forecasting (learning) (Brynjolfsson & McAfee, 2017).

Categories of artificial intelligence

AI systems are commonly categorized along two dimensions: capability and application (Russell & Norvig, 2021). Narrow (Weak) AI refers to systems designed for a single task such as speech recognition, recommendation engines, or automated proofing tools and represents the bulk of current deployments (Kaplan & Haenlein, 2019). General (Strong) AI, still theoretical, would possess human-level cognitive flexibility across domains, although no such system exists to date (Goertzel & Pennachin, 2007). Beyond capability, AI can be grouped by technique:

- **Symbolic AI:** This relies on explicit rules and logic for reasoning best for well-structured domains but brittle when rules proliferate (Giarratano & Riley, 2005).
- **Statistical learning:** It employs probabilistic models (e.g., Bayesian networks, ensemble methods) to manage uncertainty and noise in data (Bishop, 2006).
- **Neural networks & deep learning:** Utilizes layered architectures for hierarchical feature extraction, excelling at image, speech, and text processing (LeCun et al., 2015).
- **Reinforcement learning:** Agents learn optimal actions through trial-and-error interaction with environments, applied in robotics and game AI.

Understanding these distinctions enables educators and curriculum designers to select appropriate AI topics ranging from introductory logic programming to advanced neural network design tailored to business students' needs.

Specific functions of AI tools

AI tools integrate multiple algorithms to perform core functions that add value in business and educational settings:

- **Machine Learning (ML):** Learns from historical data to predict outcomes and identify patterns. In practice, ML underpins churn prediction in CRM systems and dynamic pricing models in e-commerce (Jordan & Mitchell, 2015).
- **Natural Language Processing (NLP):** Processes and generates human language, enabling applications like chatbots (e.g., ChatGPT), sentiment analysis, and automated report generation (Jurafsky & Martin, 2021).
- **Computer Vision:** Analyzes visual inputs to detect objects, read text, and monitor quality in manufacturing. Retailers use computer vision for shelf-stock monitoring, and educators can employ it for proctoring online exams.
- **Recommendation Systems:** Combine collaborative and content-based filtering to suggest products, courses, or learning materials tailored to individual profiles.
- **Expert Systems:** Encode domain knowledge in rule engines, offering decision support in areas like financial advising or supply-chain optimization (Giarratano & Riley, 2005).

By integrating these functions, AI tools automate routine tasks, uncover insights from complex data, and personalize user experiences capabilities that business education students must learn to leverage.

Functions of AI in business education

AI's integration into business education transforms pedagogy and learner outcomes through multiple avenues:

- **Adaptive learning platforms:** Systems like Knewton or Smart Sparrow tailor content difficulty and sequencing to individual learner profiles, enhancing mastery and retention
- **Automated assessment and feedback:** Tools such as Gradescope use ML to grade essays or code assignments quickly and consistently, allowing instructors to focus on substantive guidance (Holmes, Bialik, & Fadel, 2019).
- **Business simulations and virtual labs:** Platforms like Capsim and Simul8 employ AI to simulate market dynamics, enabling students to test strategic decisions in a safe, iterative environment (Boyle, Henry, Nugent & Connolly, 2016).
- **Analytics and data visualization:** Embedding AI-powered analytics tools (e.g., Tableau's AI insights) in coursework fosters data literacy, enabling students to interpret real-world financial, marketing, and operational datasets (Chen et al., 2020).
- **Intelligent tutoring systems (its):** ITS like Carnegie Learning provide 24/7 personalized guidance in quantitative subjects, supplementing classroom instruction and supporting self-paced learning (VanLehn, 2011).

Through these functions, AI not only enhances efficiency but also deepens experiential learning—preparing students to apply AI in entrepreneurial ventures immediately upon graduation.

Challenges of AI adoption in business education

Despite its transformative potential, AI integration faces significant obstacles, particularly in resource-constrained environments such as Nigerian tertiary institutions:

1. **Infrastructure deficits:** Reliable broadband, high-performance computing, and cloud services are prerequisites for AI deployment, yet many campuses lack these essentials (UNESCO, 2020).
2. **Faculty expertise gaps:** Effective AI instruction requires instructors proficient in data science, programming, and AI ethics skills often scarce among business faculty (OECD, 2019).
3. **Ethical and privacy concerns:** The use of student data for adaptive systems raises issues of consent, bias, and data security, necessitating robust governance frameworks (Floridi et al., 2018).
4. **Cost and sustainability:** Licensing fees, hardware investments, and ongoing maintenance can strain institutional budgets, challenging long-term viability (West, 2018).
5. **Resistance to change:** Cultural inertia and fear of automation replacing human roles can impede adoption, highlighting the need for change-management strategies (Selwyn, 2019).
6. **Addressing these challenges requires coordinated efforts:** investment in digital infrastructure, faculty development programs, clear ethical policies, sustainable financing models, and stakeholder engagement to build trust and foster institutional readiness.

Concept of entrepreneurship and entrepreneurs

Entrepreneurship refers to the process of identifying, developing, and bringing a vision to life by starting a new business or revamping an existing one to exploit market opportunities (Kuratko, 2016). It involves the capacity to take risks, innovate, and coordinate resources to create value. Entrepreneurship is not only about creating profit-driven ventures but also includes social, digital, and technological initiatives aimed at solving problems and creating social impact (Hisrich, Peters, & Shepherd, 2020).

An entrepreneur, on the other hand, is an individual who initiates, manages, and assumes the risks of a business or enterprise. Entrepreneurs are often characterized by creativity, proactiveness, resilience, and the ability to handle uncertainty. Naturally the entrepreneurs always search for change, respond to it, and exploit it as an opportunity.” In modern economies, entrepreneurship plays a critical role in innovation, employment creation, and economic growth, especially in developing countries like Nigeria where youth unemployment is high and innovation-driven businesses are essential (Ogundele, Akingbande, & Akinlabi, 2012).

Types of entrepreneurship

Entrepreneurship can be classified into various types based on motivation, size, nature, and objectives:

- **Small Business Entrepreneurship:** These are local businesses such as retail stores, service providers, and artisans. They usually serve a local market and are often family-owned
- **Scalable Startup Entrepreneurship:** These are businesses founded with the goal of scaling up quickly, often tech-driven, like software companies or digital platforms.
- **Social Entrepreneurship:** Entrepreneurs in this category aim to solve social problems through innovative solutions while also maintaining financial sustainability.
- **Corporate Entrepreneurship (Entrepreneurship):** This occurs within existing corporations where employees act like entrepreneurs to innovate or lead new projects.
- **Innovative Entrepreneurship:** These entrepreneurs bring new products, processes, or business models to market. They are often seen in high-tech sectors.
- **Imitative Entrepreneurship:** Common in developing economies, these entrepreneurs copy existing ideas, goods, or services and adapt them to local markets.

Functions of entrepreneurship

Entrepreneurship serves numerous key functions in the economy and society:

- **Innovation:** Entrepreneurs introduce new ideas, products, or services.
- **Risk bearing:** They take on the financial, psychological, and social risks associated with starting and running a business (Hisrich et al., 2020).
- **Resource coordination:** Entrepreneurs bring together land, labor, capital, and enterprise to create value.
- **Job creation:** SMEs and start-ups significantly contribute to employment generation.
- **Economic growth:** Entrepreneurship promotes capital formation and productivity, thus boosting GDP (Naudé, 2010).
- **Wealth creation:** By building successful enterprises, entrepreneurs generate wealth for themselves and others.

Challenges of entrepreneurship

Despite its potential, entrepreneurs face numerous challenges, particularly in developing contexts:

- **Lack of access to finance:** Many aspiring entrepreneurs struggle to obtain capital from formal financial institutions (OECD, 2019).
- **Inadequate infrastructure:** Poor electricity, internet connectivity, and transportation affect productivity and market access (NBS, 2021).
- **Bureaucracy and regulatory barriers:** Lengthy procedures and inconsistent government policies hinder entrepreneurship (World Bank, 2020). Skills Gaps: Lack of entrepreneurial, managerial, or digital skills among young people, especially in rural areas (UNDP, 2022).
- **Market access:** Limited reaches to local and global markets, especially for small-scale producers.
- **Security and instability:** Political instability and insecurity in certain regions discourage investments and innovation.

Methods of improving the challenges of entrepreneurship

To promote sustainable entrepreneurship, especially in emerging economies like Nigeria, the following steps are recommended:

- **Entrepreneurship education:** Incorporate entrepreneurial skills and mindset into school and university curricula.
- **Access to funding:** Government and private sectors should provide grants, microloans, and investment incentives to startups. **Infrastructure Development:** Improve roads, internet, and power supply to enable business operations.
- **Policy support:** Streamline business registration processes and offer tax incentives for new businesses.
- **Mentorship and incubation programs:** Link young entrepreneurs with experienced mentors and business incubators.
- **Technology integration:** Encourage digital transformation through access to tools, training, and AI platforms to enhance productivity. (Fagolla & Gailly, 2008)

Integration of business education, artificial intelligence (AI), and entrepreneurship

In the evolving landscape of the 21st century, the convergence of business education, artificial intelligence (AI), and entrepreneurship has become a strategic imperative for developing globally competitive, innovative, and digitally competent individuals. This integration not only redefines the way future entrepreneurs are trained but also shapes the overall ecosystem of education and enterprise.

Integration in this context refers to the deliberate and strategic alignment of educational content, technological tools, and entrepreneurial skills to foster innovation and socio-economic development (OECD, 2021). Business education traditionally focuses on imparting knowledge in areas such as accounting, management, finance, and marketing. However, by embedding AI and entrepreneurship into the curriculum, institutions can produce graduates who are technologically literate, problem-solving oriented, and business savvy (Eze & Adu, 2022).

It is very imperative to note that integration of business education, AI, and entrepreneurship is not merely a trend. It is a necessary transformation to prepare learners for the digital economy. It enables the development of innovative entrepreneurs equipped to navigate a technologically advanced and competitive world. By addressing challenges and maximizing opportunities, educational institutions can play a pivotal role in national and global economic advancement.

Business education as a foundation

Business education serves as the backbone for developing entrepreneurial acumen. It provides learners with the conceptual and practical tools necessary to understand market operations, customer behaviours, and financial management. According to Nwazor (2020), business education cultivates innovation, leadership, and strategic thinking—qualities essential to entrepreneurship. By integrating digital technologies and AI, business education becomes more experiential and aligned with modern demands.

Artificial intelligence as a catalyst

AI refers to computer systems capable of performing tasks that typically require human intelligence, such as problem-solving, decision-making, learning, and language processing (Russell & Norvig, 2020). Its application in business education enhances both teaching and learning through intelligent tutoring systems, predictive analytics, and automated grading tools. Moreover, AI enables data-driven decision-making, which is critical for entrepreneurial ventures (Nguyen & Tran, 2021).

Entrepreneurship

Entrepreneurship is the ability to identify opportunities, mobilize resources, and take calculated risks to create value (Drucker, 2014). AI-enhanced business education prepares students to become proactive entrepreneurs by equipping them with tools for market analysis, customer profiling, and innovation management. For instance, platforms such as Google Analytics, ChatGPT, and Salesforce support entrepreneurs in generating insights, automating business processes, and improving customer engagement (Kaplan, 2022).

Benefits of integration

- **Enhanced skill set:** Students develop a hybrid skill set combining business knowledge, tech literacy, and creative thinking (World Bank, 2023).
- **Innovation and productivity:** AI tools increase productivity and open new business opportunities.
- **Real-World preparedness:** Integrated learning mirrors real-world business environments, making students more employable and self-reliant.

Challenges of integration

Despite its benefits, integrating AI and entrepreneurship into business education faces several obstacles:

- **Infrastructure gaps:** Many institutions, especially in developing countries, lack the necessary digital infrastructure.
- **Faculty readiness:** Teachers may not have the required skills to implement AI-based instruction.
- **Cost implications:** Implementing and maintaining AI tools can be expensive.
- **Ethical concerns:** Issues such as data privacy, algorithmic bias, and job displacement raise moral and legal questions (Binns, 2018).

Strategies of improving the challenges of integration

To ensure successful integration:

- **Policy reforms:** Governments should revise curricula to include AI and entrepreneurship across all levels of education.
- **Capacity building:** Continuous training for teachers and administrators is crucial.
- **Partnerships:** Collaboration with tech companies can ease access to AI tools and mentorship.
- **Inclusion:** Efforts must be made to bridge the digital divide by providing equal access to learning technologies. (World Bank, 2023).

Conclusion

In light of the digital transformation reshaping global economies, Nigeria must proactively leverage artificial intelligence to drive entrepreneurial growth and national development. This paper has emphasized the critical role of business education as a foundational platform for cultivating AI-driven entrepreneurs' individuals who are capable of navigating the complexities of the digital age with innovation, resilience, and responsibility. As articulated in the abstract, Nigeria's growing youth population, rising unemployment rates, and digital skills gap demand an urgent educational reformation. Integrating AI into business education is not merely a curriculum update; it is a strategic intervention that aligns education with the realities of the 21st-century economy. It positions learners to solve real-world problems, create sustainable businesses, and compete effectively on the global stage. Business education in Nigeria serve as a catalyst for producing AI-literate entrepreneurs who are empowered to create jobs, solve local problems, and participate competitively in the global innovation ecosystem

However, realizing this vision requires overcoming barriers such as outdated curricula, infrastructural deficiencies, and inadequate faculty preparation. Through curriculum modernization, experiential learning, institutional investment, and cross-sector collaboration, business education can be transformed into a catalyst for inclusive, AI-driven entrepreneurship. Re-imagining business education in Nigeria through AI integration is not a theoretical ambition it is a national necessity. The paper concludes by affirming that a restructured business education system is essential for equipping Nigerian students with the tools to become competitive, AI-enabled entrepreneurs in a digitally transforming world. Doing so will equip the next generation of entrepreneurs with the mindset, tools, and skills required to thrive in a digitally transforming world and contribute meaningfully to Nigeria's socio-economic advancement

Recommendations

To effectively harness the transformative power of artificial intelligence within business education and prepare AI-driven entrepreneurs for the Nigerian economy, the following recommendations are proposed:

1. There is an urgent need to revamp existing business education curricula to include AI-related subjects such as data analytics, machine learning, AI ethics, and digital innovation. This will ensure learners develop competencies relevant to the future workplace.
2. Educational institutions should adopt experiential learning approaches by establishing innovation hubs, simulation labs, and digital incubation centers. These facilities would provide students with hands-on experience in developing AI-enhanced business solutions.
3. Faculty development programs should be instituted to equip lecturers with both pedagogical skills and technological competencies. AI literacy training and digital teaching methodologies will ensure educators can confidently deliver reformed content.
4. Collaboration between academia, industry players, and tech firms is vital. These partnerships can provide mentorship, internships, and funding, thereby strengthening the link between theoretical knowledge and real-world business innovation.
5. The government and private sector must invest in ICT infrastructure, particularly in underserved areas. Providing stable internet, power supply, and affordable devices will enable inclusive access to AI-integrated education.
6. National education and innovation policies should explicitly support the integration of AI into entrepreneurship education. This includes allocating funds for research, training, and curriculum implementation, particularly in tertiary institutions.
7. Business education must instill ethical AI principles in students, including transparency, fairness, and social responsibility. Emphasis should also be placed on inclusivity, ensuring gender balance and support for disadvantaged groups in digital entrepreneurship initiatives
8. Establish innovation hubs and labs for experiential learning in AI-enhanced entrepreneurship.
9. Provide AI-focused pedagogical training to improve teaching effectiveness.
10. Invest in stable internet, power supply, and ICT tools, especially in underserved areas. Formulate and fund national policies supporting AI in business education. Teach fairness, transparency, and inclusivity in the application of AI.

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