TEACHING LEARNERS AI TOOLS REQUIRED FOR DIGITAL ENTREPRENEURSHIP SKILLS DEVELOPMENT IN PUBLIC TERTIARY INSTITUTIONS IN RIVERS STATE

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Abstract

The perceived roles of AI tools in entrepreneurial activities informed this study: "teaching learners AI tools required for digital entrepreneurship skills development in public tertiary institutions in Rivers State." Two research questions guided the study, and two null hypotheses were tested. A descriptive survey research design was adopted. From a population of 136 Business Education lecturers, a census survey sampling was employed. A four-point response options questionnaire was used for data collection, and it was validated by three experts. The reliability of the instrument was established using Cronbach's alpha, which yielded coefficients of 0.73 and 0.74. The mean and standard deviation were used to answer the two research questions and measure the spread in respondents' opinions, while one-way analysis of variance (ANOVA) was used to test the two null hypotheses at the 0.05 level of significance. Findings revealed that all the types of AI tools listed were highly required to teach learners, leading to digital entrepreneurship skills development, while educational attainment and years of teaching experience play vital roles in teaching AI tools to learners for digital entrepreneurship skills development. The researchers concluded that if learners are taught all the AI tools, it will lead to effective and efficient digital entrepreneurship skills development for job creation. Among other things, it was recommended that federal, state and heads of institutions should provide adequate hardware and software AI tools for effective teaching of AI tools for digital entrepreneurship skills development.

Keywords: teaching, learners, artificial intelligence (AI), artificial intelligence tools, digital entrepreneurship development.

Introduction

Teaching is an attempt to assist people in acquiring knowledge, entrepreneurship skills, attitudes, ideas or appreciation (Ukata et al., 2017). Teaching is also an interaction between teachers and students under the auspices of the teacher in order to bring about the expected change in the students' behaviour (Ukata & Silas - Dikibo, 2019). Teaching is a great profession; it is an act of relating information to the learner or assisting in the learning of how to do something in a required manner (Ukata & Nmehielle, 2020). It is a process of assisting the learner to gain useful skills, attitudes, ideas, and values in a designed and organised environment that will help the learner become an acceptable person to society as well as be independent in life (Ukata & Kalagbor,

2017). Teaching leads to learning (Ukata & Silas-Dikibo, 2021). Teaching is an exchange of ideas between a teacher and students (learners) on what to learn, how to learn, what to use in learning and what to do with the learning (Ukata, 2019a; Ukata, 2019b).

Learners

Learners are persons involved in the learning process, regardless of age, circumstance, or location. Whether they are enrolled in formal schooling, self-directed learning, or professional development, it encompasses kids, teens (students), and adults (Ukata & Mekuri-Ndimele, 2025). The word "learners" highlights the active role people play in learning new things (AI tools) and includes different learning environments. Conversely, people enrolled in formal educational institutions like schools, colleges, polytechnics, or universities are usually referred to as students (Ukata & Worgu, 2025). People who participate in informal or self-directed learning may not be included in this more particular phrase. However, in the context of this study, both learners and students are used interchangeably (Skill-keep, 2023). These learners, who are prospective entrepreneurs, by undertaking entrepreneurship education and starting their own businesses, if properly taught AI tools, have the potential to decrease the ratio of unemployment and increase the amount of economic growth using innovative ideas/products/services/technologies and the foundation of ventures, generated as a result of entrepreneurship (Chen et al., 2024).

Artificial Intelligence

AI (Artificial Intelligence) is the theory and development of computer systems that can perform tasks requiring human intelligence, such as business management, teaching, visual perception, speech recognition, decision-making, and translation between languages (Ukata & Agburuga, 2024a; Ukata & Agburuga, 2024b; Pattam, 2021). Artificial intelligence is the science of making machines think and act like humans. AI is an advanced part of information and communication technology (ICT) which adopts the application of hardware and software in imitation to imitate and demonstrate what human beings can do with those technologies (tools) (Ukata & Amini, 2024). AI has been adopted in science, technology, engineering and mathematics teaching and learning at all levels of educational institutions, whereas social science struggles with this intelligent technology because of ill-structured content (Roll & Wylie, 2016). Meanwhile, despite the recent surge in the utilisation of generative AI tools and their applications, the progression of AI technology, from weak to strong, has yet to reach a point where it can effectively replace the tasks performed by experienced educators to enable learners to develop the needed skills (Obschonka & Audretsch, 2020). Especially, educators in the domain of entrepreneurship education rarely introduce educational technologies in their daily teaching and administration (Chen et al., 2021). As the widespread integration and application of AI into entrepreneurship is apparent, there is a notable lag in the development of comprehensive theoretical summaries to guide future entrepreneurship and entrepreneurship education practices. However, scholars and practitioners are eager to know its possibilities and opportunities. High-impact entrepreneurial journals have published research on AI in entrepreneurship, with exploration and reviews conducted in the early stages (i.e., Chalmers et al., 2021; Shepherd & Majchrzak, 2022), whereas there is a notable absence of reviews addressing AI application in entrepreneurship education for the development of entrepreneurial skills by learners.

Artificial Intelligence Tools

Artificial intelligence tools are software and hardware applications that use artificial intelligence algorithms (coding) to perform a specific task and solve problems that ordinarily would have been done by human beings. AI tools can be used in a variety of ways, from healthcare industries to

business, finance, sales, marketing, image generators, video creation, education, content, and many more.

Artificial Intelligence has now become a big part of the present and future generations, especially in this era of digital entrepreneurship. These AI tools may include Market Research and Trend Analysis, business simulation, conversica, ChatGPT, Grammarly, QuickBooks and Xero, Based Mentorship and networking, among others (GeeksforGeeks, 2024).

As technology maturity progresses, AI, a disruptive, innovative technology, provides new paths to solve practical and theoretical problems existing in entrepreneurial learning and teaching. As hybrid learning becomes increasingly prevalent in the field of education (Ratten, 2023), educators responsible for instructing on venture creation should earnestly consider gleaning valuable insights from experts in the realm of AI Entrepreneurship Education. These experts bring a unique blend of both practical acumen and scholarly expertise in the application of AI for the development of entrepreneurial skills among learners to create ventures. The use of digital teaching and learning resources in entrepreneurship courses has become a malleable tool, and its impacts have been thoroughly investigated and empirically and theoretically supported; e.g., augmented engagement and satisfaction via Interactive and gamified pedagogy yields higher student engagement than more traditional approaches (Shepherd & Gruber, 2021). With the use of immersive and interactive learning environments for the students, digital technologies guarantee that the students are interested and engaged, which are parameters of the development of entrepreneurial skills (Clark & Mayer, 2023).

Teaching Learners Artificial Intelligence Tools

Teaching learners artificial intelligence tools is an attempt to assist people in acquiring knowledge, digital entrepreneurship skills, attitudes, ideas or appreciation in the use of various artificial intelligence tools or machines such as Marvis Beacon Teaches Typing, Market Research and Trend Analysis, Business Simulation, Conversica, ChatGPT, QuickBooks and Xero, Based Mentorship and Networking, Pitching and Funding for effective and efficient business management. This is also an interaction between teachers and students under the auspices of the teacher to bring about the expected change in the students' behaviour in the use of artificial intelligence tools or machines such as Marvis Beacon. Teaches typing, Market Research and Trend Analysis, and business simulation in successful business management through the digital entrepreneurship skills developed over time.

The incorporation of digital technologies in education, like Artificial Intelligence (AI), is changing the manner in which teaching and learning occur while helping to address the challenges in access to quality education for everyone (UNESCO, 2025). Applications of machine learning, natural language understanding, adaptive learning technologies, and computer vision are examples of AI paradigm shifts in education (Young, 2024). AI is also making strides in the field of business education through the emergence and proliferation of personalised learning programs and intelligent tutoring systems. The same applies to the use of AI in teaching and learning business education, where personalisation, efficiency, and effectiveness are greatly improved, helping to prepare students for the realities of the world of business and skills development. Moreover, generative AI tools can prepare learners with digital entrepreneurship skill of how to capture big ideas to establish small scale viable businesses, customer retention and marketing planning, and business concept development using industry analysis (Okonkwo et al. 2025).

Digital Entrepreneurship Skills Development

Digital entrepreneurship skills development is the process of acquiring modern-day business skills that involve the use of the internet, AI tools and novel digital technologies. It is the learning

of skills that encompasses various activities, such as doing an online course, creating, blogging, podcasting, or selling digital or physical products that will assist one run online business successfully (Ukata & Amini, 2022; Ukata & Silas-Dikibo, 2022). Digital entrepreneurship skills development is to leverage technologies to find and satisfy customers, reduce costs, and collaborate with others for efficient and effective business management (Ukata & Nmehielle, 2023). This learning may take place under the auspices of the teacher or learning independently via watching online videos or reading materials. AI-based collaborative teaching model not only provides educators with a brand-new teaching strategy that deeply integrates technology into education, but also helps students better adapt to future career needs, thereby cultivating their teamwork, innovative thinking and practical ability (Liu & Zheng, 2023). This approach uses digital technology in teaching to create constructive collaborative learning environments that especially target the development of digital entrepreneurship skills.

In Nigeria, youth unemployment is a pressing issue due to limited industrial activities and graduates' over-reliance on government jobs (National Bureau of Statistics, 2023). This underscores the need for business education students to be taught AI tools towards entrepreneurial activities, thereby fostering job creation and contributing to economic development. However, integrating AI teaching models faces challenges like limited technological infrastructure, funding, training, resistance to change, and data privacy concerns (Ezeabii et al., 2020). Insufficient funding hinders the procurement of necessary AI teaching tools, while inadequate training and professional development hinder effective use of AI teaching models (Wahab & Akintade, 2025). Ukeh and Anih (2024) and Akinyemi and Ezekiel, 2022) revealed low adoption of AI technologies in teaching practices by Nigerian lecturers. Similarly, Idhalama et al. (2023) found that lecturers' use of emerging teaching technologies was still quite low in Nigeria. In the same vein, Asogwa (2024) disclosed that challenges such as lack of continuous professional development, increase in AI-related workload, concerns about AI replacing human lecturers, and difficulties in integrating AI with traditional teaching methods hinder lecturers from effectively adopting AI in instructional delivery. Business educators include male and female, and their main responsibility is to prepare their students by equipping them with 21st century skills (digital entrepreneurial skills inclusive) for self-reliance (job creation) upon graduation

Digital Entrepreneurship Skills

Digital entrepreneurship skills are those skills that involve the use of the internet and novel digital technologies of hardware and software. Entrepreneurs who are typically taught small business creation and owners are to work on small businesses like restaurants and stores via the use of artificial intelligence (Ukata et al., 2017). Digital entrepreneurship skills as well refers possessing the required digital skills in the management of hardware and software to run a business online (Ukata & Amini, 2022). It encompasses various activities, such as being an online course creator, blogger, podcaster, or selling digital or physical products. Digital entrepreneurs leverage technology to find and satisfy customers, reduce costs, and collaborate with others (Mailchimp,2024). This means you can only do this business effectively and efficiently through the use of AI tools.

Effective Digital Entrepreneurship Skills Development

Effective digital entrepreneurship skills development is acquiring the ability and skills that will enable one to reach organisational goals by following the established process, and this can be measured by key performance indicators (output) or feedback from customers on how good or bad the organisation is doing (Ukata & Silas-Dikibo, 2022). Effective digital entrepreneurship skills development is a systematic process of acquiring new skills, abilities, or enhancing existing

skills for effective job performance, such that professionals in an organisation are able to achieve organisational targets by following the established process by the organisation (Ukata & Okpokwasili, 2024). It is about acquiring hardware and software management skills essential for personal and professional growth that enable individuals to adapt to changing global job markets and technological advancements, which help team members in business to focus on completing their tasks according to the company's established standard (Axen, 2023).

Efficient digital entrepreneurship skills development is gaining and growing hardware and software management skills essential for personnel in maximising the available resources, time, and money to achieve the company's objectives, and can be tracked by looking at the impact on revenue and inventory rate of turnover (Ukata & Silas-Dikibo, 2021). Efficient digital entrepreneurship skills development includes, but is not limited to, acquiring and growing hardware and software management skills with the use of internet connectivity that assist team members to focus on reducing expenses, saving time and resources while ensuring they achieve the best result or make a profit (Indeed Career Guide, 2024). In today's rapidly evolving economy, continuous learning, reskilling and upskilling through training or academic programmes in the aspect of utilisation of AI tools are crucial for maintaining competitiveness and relevance in the volatile global workforce, with employability skills development to measure your efficiency in the company by tracking how your contributions have resulted in changing the company's revenue and inventory rate of turnover (Axen, 2023).

According to Crescenzi-Lanna (2023), artificial intelligence has applications across many fields, such as entrepreneurship, education, finance, automotive, entertainment, and more, and it is rapidly transforming industries through automation and intelligent decision-making systems. Teaching learners these AI tools is becoming a key asset in Business and Entrepreneurship Education. Offering these tools enhances learning, streamlines operations, and develop critical thinking of the learners. Accordingly, the following are some of the AI tools learners need to be taught for effective and efficient digital entrepreneurship skills development for successful business management (Ukata & Mekuri-Ndimele, 2025; Mailchimp, 2024; Amesi & Peterside, 2024):

Business Simulations

Business Simulations venture is an artificial intelligence platform that provides environments where entrepreneurship education lecturers and students can practice decision-making in realistic business scenarios. AI-driven simulations can also be used to let students or graduates of Business and Entrepreneurship Education run virtual companies by helping them understand market dynamics, finance, and management.

Market Research and Trend Analysis

Crimson Hexagon is an artificial intelligence tool that empowers students and lecturers to have an insight into market research and trend analysis in online conversations and provides data-driven insights for business strategy. For example, Google Trends utilises artificial intelligence to analyse search trends, which could also be used to help Business and Entrepreneurship Education students to identify emerging market demands and consumer behaviours. In this way, Business and Entrepreneurship Education students will be effective and efficient in market research and trend analysis.

Financial Management

Financial Management tools like QuickBooks and Xero automate bookkeeping, generate financial reports, and provide insights into cash flow management. Also, Kabbage and Fundbox are artificial intelligence-driven platforms that could offer Business and Entrepreneurship learners quick access to working capital through data-driven lending models.

Based Mentorship and Networking

AI-based mentorship and networking have an artificial intelligence-driven tool like MentoBot, a connecting device that connects Business and Entrepreneurship students with virtual mentors or coaches, offering advice, feedback and guidance on various business-related issues. Business and Entrepreneurship Education learners could also use devices like LinkedIn to help them connect with the right networks based on interests, industry trends, and mutual connections.

Pitching and Funding

Pitching and Funding has an artificial intelligence software like the PitchBook tool that could help Business and Entrepreneurship Education learners refine their pitches by offering feedback on presentation structure, storytelling, and investor interests.

The Gust, for instance, is also an artificial intelligence-driven platform that could also help students and graduates to connect with investors, streamlining the pitch process with data insights and matching capabilities (Online Degrees, 2024; Dwivedi et al., 2021).

The following are some of the ways artificial intelligence tools may be used for effective and efficient digital entrepreneurship skills development. These include: Enhancing critical thinking and decision-making through AI simulations, empowering strategic decision-making with data analytics skills, enhancing student support and engagement with AI-Powered virtual assistants, supporting aspiring entrepreneurs with AI-enhanced business planning tools, facilitating remote learning and fostering global collaboration, and simplifying networking and mentorship through AI-driven connections (Ukata & Worgu, 2025; Ukata & Obinichi-Aaron, 2025 & Nwadiuto, 2024).

Theoretical Underpinning

Theoretical Underpinnings of Digital Tools in Entrepreneurship Education. Entrepreneurship education aims at teaching the learner the ability, attitudes and learning to survive and work in uncertain and dynamic environments. Experiential learning theory of Kolb (1984) (Kolb, 2014; Kolb et al., 2014) supports the integration of digital tools in pedagogy.

In this theory, the process of meaningful learning is described as cyclical, containing concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Digital tools are in keeping with this model by offering interactive modelling, simulations, real-time feedback, and iterative practice. Interactive platforms (e.g., Moodle and Blackboard) allow for both the delivery of content and collaborative activities that help towards reflective observation. Simulation (e.g., SimVenture and Capsim) provides fully immersive experiences by simulating entrepreneurship in the real world, in a controlled environment. These are the modalities in which students can experience decision-making, providing an updated version of Kolb's six-step model (Bell et al., 2008; Kolb et al., 2014) in an extremely active way. This is relevant to this study as the theory provides the opportunity for teaching learners AI tools required for digital entrepreneurship skills development for venture and wealth creation to reduce socio-economic challenges.

Subjects and Moderating Variables of the Study

The subjects for this study are Business Education lecturers with different levels of educational attainment and years of teaching experience in public tertiary institutions in Rivers State. How

well lecturers demonstrate knowledge of AI in teaching depends on their level of educational qualification, training and retraining, age and teaching experience (Ukata & Obinichi-Aaron, 2025). For example, lecturers with higher degrees such as (PhD and M.Sc. /M.Ed.) are expected to possess higher knowledge and skills with AI-related teaching experience than those with HND/B.Sc./B.Ed (Ezenwafor & Ukata, 2022a; Ezenwafor & Ukata, 2022b). Accordingly, Ukata and Okeke (2023), Ukata and Nmehielle (2022) claimed that teaching experience and age are among the factors that influence lecturers' knowledge and skills in AI-related teaching experience because younger and more experienced lecturers may possess higher levels than older and less experienced ones. Also, lecturers who have spent 10 years and above teaching AI-related courses are expected to possess higher knowledge and skills to be able to identify the types of AI and their benefits to apply in teaching business education courses than those with less than 10 years of teaching experience. Consequently, the study will test the influence of these respondents' variables, namely their level of educational attainment and years of teaching experience, on teaching learners AI tools required for effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State.

Statement of the Problem

Artificial Intelligence (AI) as an aspect of information and communication technologies (ICTs) seems to be reshaping numerous sectors, including the business environment. In picturing the future jobs and successful business managers' requirements, business teachers may need to equip learners with proficiency in digital entrepreneurship tools to make them effective and efficient in engaging in entrepreneurial activities. The researchers are highly worried that, despite the available AI tools and the perceived benefits of teaching learners for effective and efficient digital entrepreneurship skills development, lecturers seem not knowledgeable and skilful in the AI tools, and learners also seem not to be developed with the needed AI tools to be functional in the current global work environment. These were the reasons for this study: "teaching learners AI tools required for digital entrepreneurship skills development in public tertiary institutions in Rivers State." The findings of the study will provide empirical data through recommendations to enable stakeholders to address related issues.

Purpose of the Study

The purpose of this study was to determine AI tools required for teaching learners for effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State. Specifically, the study seeks to:

1. Find out the types of AI tools required to teach learners for effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State.
2. Find out how the AI tools required to teach learners lead to effective and efficient digital entrepreneurship skills development

Method

The study adopted a descriptive survey research design. The descriptive survey research design was deemed appropriate since it sought to obtain the views of Business Education lecturers on the topic, "teaching learners AI tools required for digital entrepreneurship skills development in public tertiary institutions in Rivers State.''

The population of the study was 145 lecturers selected from the Federal College of Education (Technical) Omoku (57), University of Port Harcourt (9) Rivers State University (21) and Ignatius Ajuru University of Education (25), Captain Elechi Amadi (14) and Ken Sarowiwa Polytechnic (10), (Head of the Departments of Business Education of the Institutions, 2025). Census

technique was adopted to sample all the 136 Business Education lecturers because it was of manageable size. The instrument used for data collection was a self-designed four-point response options questionnaire titled: "IA Tools Required to Teach Learners for Effective and Efficient Digital Entrepreneurship Skills Development" (AITRTLEEDESD)". It contains two sections. Sections A and B. Each section carries 5 items and was rated as very highly (4.50 - 500), highly (3.50 - 4.49), moderately (2.50 - 3.49), and lowly (1.50 - 2.49). The questionnaire was subjected to face and content validation by three experts from the Faculty of Education in Ignatius Ajuru University of Education, Port Harcourt. The measure of internal consistency method was used to establish the reliability of the instrument. The instrument was administered to 20 lecturers from the University of Uyo who were not part of the population of the study. Cronbach's alpha was applied to compute the reliability coefficient, which yielded alpha values of 0.73 and 0.74. These high reliability coefficients showed that the instrument is reliable. The researcher(s) personally administered the copies of the questionnaire to the respondents in their schools with the help of four (4) research assistants who were adequately briefed on the modalities to follow. The researchers first visited each of the tertiary institutions and sought consent from the relevant Heads of Department for the study. Thereafter, the researchers and assistants visited each school and handed over the required number of copies of the instrument to the Heads of Department to distribute to the lecturers for completion and revisited after five working days to retrieve the completed copies. One hundred and twenty copies of the instrument (120), representing 83% of the administered copies, were correctly filled, retrieved and used for the data analysis. The arithmetic mean and standard deviation were used to answer the two research questions and ascertain how homogeneous or heterogeneous the respondents' opinions were relative to the questionnaire items and the aggregated mean. The one-way analysis of variance (ANOVA) was used to test the null hypotheses at the 0.05 level of significance. The ANOVA was used for the two null hypotheses because it measured one categorical independent variable with three levels of moderating variables. A null hypothesis was not rejected when the calculated significance (Sig.) value (p- value) was greater than or equal to (≥) the alpha value of 0.05. Otherwise, the null hypothesis was rejected. The data analysis was carried out using Statistical Package for Social Sciences (SPSS) version 25.

Result, Analysis and Discussion

Question 1

What are the types of AI tools required to teach learners for effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State?

Table 1: Respondents' mean ratings on the types of AI tools required to teach learners for digital entrepreneurship skills development.

N = 120

SN	types of AI tools required to teach learners for effective…	$\bar{X}$	SD	Remarks
1	Business Simulations	4.15	.73	Highly
2	Market Research and Trend Analysis	4.33	.72	Highly
3	Financial Management	4.14	.61	Highly
4	Based Mentorship and Networking	4.41	.62	Highly
5	Pitching and Funding	4.16	.74	Highly
	Aggregated Mean	**4.23**		**Highly**

Table 1 shows that all the 5 listed types of AI tools were highly required to teach learners for effective and efficient digital entrepreneurship skills development, with mean scores that

ranged from 4.14 to 4.41. Correspondingly, the aggregated mean score of 4.23 also shows that all the types of AI tools listed were highly required to teach learners for effective and efficient digital entrepreneurship skills development. The standard deviations for the 5 listed items ranged from 0.61 to 0.74, which shows that respondents were homogeneous in their opinions that all the mentioned AI tools were highly required to teach learners for effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State.

Question 2

How would the AI tools required to teach learners lead to effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State?

Table 2: Respondents' mean ratings on how the AI tools required to teach learners digital entrepreneurship skills development. N = 120

SN	How AI tools required to teach learners lead to effective…	$\bar{X}$	SD	Remarks
1	AI-based simulations enhancing data analytics skills and critical thinking and decision-making	4.14	.72	Highly
2	AI-driven virtual assistants and chatbots provide instant, round-the-clock support by answering queries from clients	4.12	.71	Highly
3	AI tools provide aspiring entrepreneurs with valuable insights into market trends and consumers' behaviour	4.11	.73	Highly
4	AI-powered tools facilitate remote learning and foster global collaboration among entrepreneurs	4.10	.72	Highly
5	AI-powered platforms enhance networking opportunities by connecting students with industry experts, mentors, and peers	4.12	.74	Highly
	Aggregated Mean	**4.11**		**Highly**

Table 2 shows that all the 5 listed types of AI tools were highly required to teach learners, leading to effective and efficient digital entrepreneurship skills development, with mean scores that ranged from 4.10 to 4.14. In like manner, the aggregated mean score of 4.11 also shows that the 5 listed types of AI tools were highly required to teach learners, leading to effective and efficient digital entrepreneurship skills development. The standard deviations for the 5 listed items ranged from 0.71 to 0.74, which shows that respondents were homogeneous in their opinions that all the mentioned AI tools were highly required to teach learners to lead effective and efficient digital entrepreneurship skills development in public tertiary institutions in Rivers State.

Hypotheses Testing

The following null hypotheses were tested at the 0.05 level of significance:

$H0_1$: There is no significant difference in the mean responses of lecturers on the types of AI tools required to teach learners digital entrepreneurship skills development based on their educational attainment.

Table 3: ANOVA summary of mean responses on the types of AI tools required to teach learners digital entrepreneurship skills development based on their educational attainment.

Sources of Variance	Sum of Squares	Df.	Mean Square	F-cal.	Sig.	Decision
Between Groups	2.458	2	1.229	2.719	.183	Not rejected H_{01}
Within Groups	53.357	118	.452			
Total	**55.815**	**120**				

Table 3 shows a calculated F-value of 1.229 with a significant (sig.) p-value of 0.183, which is greater than the alpha value of 0.05 (0.183 > 0.05) at degrees of freedom of 2 and 118. Therefore, the null hypothesis (H_{01}) was not rejected. This means that there is no significant

difference in the mean rating of lecturers on the types of AI tools required to teach learners for effective and efficient digital entrepreneurship skills development based on their educational attainment.

H02: Lecturers do not differ in their mean responses on how the types of AI tools required to teach learners lead to digital entrepreneurship skills development based on their years of experience.

Table 4: ANOVA summary of mean responses on how the types of AI tools required to teach learners lead to digital entrepreneurship skills development based on their years of experience.

Sources of Variance	Sum of Squares	Df.	Mean Square	F-cal.	Sig.	Decision
Between Groups	1.641	2	.8205	2.109	.142	Not rejected H_{02}
Within Groups	45.959	118	.389			
Total	**47.600**	**120**				

Table 4 shows a calculated F-value of 2.109 with a significant (sig.) p-value of 0.142 is greater than the alpha value of 0.05 (0.142 > 0.05) at degrees of freedom of 2 and 118. Therefore, the null hypothesis (H02) was not rejected. This means that lecturers do not differ in their mean responses on how the types of AI tools required to teach learners lead to effective and efficient digital entrepreneurship skills development based on their years of experience.

Discussion

The findings of the study showed that all the types of AI tools listed were highly required to teach learners for effective and efficient digital entrepreneurship skills development. The finding agrees with Crescenzi-Lanna (2023) and Amesi and Peterside (2024), who argued that AI tools in businesses and schools offer multiple possibilities for business owners, school teachers, administrators and students. This finding agrees with Duruamaku-Dim and Duruamaku-Dim (2019), who revealed that Business Education undergraduates require digital communication competencies to establish and manage successful enterprises. Also, Ogongo (2024) reported that social media commerce, search engine optimisation (SEO), and targeted online marketing skills improve business visibility, customer reach, and market competitiveness. Khan (2021) emphasised that digital communication skills are indispensable for effective entrepreneurial operations. Okoli and Umeoka (2026) likewise identified AI digital communication skills as required for effective workplace performance and modern business management. Additionally, the findings showed that there is no significant difference in the mean rating of lecturers on the types of AI tools required to teach learners for effective and efficient digital entrepreneurship skills development based on their educational attainment. This finding corresponds with the reports of Ezenwafor and Ukata (2022a), who postulated that how well lecturers explore AI tools in improving the teaching of AI-related courses for effective and efficient digital entrepreneurship skills development depends on their level of educational qualification, training and retraining.

The findings of the study correspondingly showed that the types of AI tools were highly required to teach learners, leading to effective and efficient digital entrepreneurship skills development. The findings of the study harmonise with the views of Nwadiuto (2024), who argued that artificial intelligence tools enhance critical thinking and decision-making through AI simulations, empowering strategic decision-making with data analytics skills, enhancing student support and engagement with AI-powered virtual assistants, supporting aspiring entrepreneurs with AI-

enhanced business planning tools, facilitating remote learning and fostering global collaboration, and simplifying networking and mentorship through AI-driven connections. Commonly used AI tools in Nigerian higher education include ChatGPT, Grammarly, QuillBot, and Snapchat AI for assignments, studying, idea generation, and information retrieval (Ngonso et al., 2025; Orok et al., 2024). AI tools also include Waymo and generative AI tools such as ChatGPT, Gemini, Chalkie, and AI art. Odoh et al. (2018) listed AI types as Expert Systems, Neural Networks, Robotics, Genetic Algorithms, and Natural Language Processing (NLP). Benhamou and Janin (2018) highlighted Machine Learning (ML), NLP, Computer Vision, Robotics, Expert Systems, Reinforcement Learning, Generative AI, and AI Ethics and Explainability. Dong et al. (2025) highlighted various AI applications such as intelligent tutoring systems, adaptive learning systems, automated tutors, virtual simulations, and generative AI. Ifi et al. (2026) noted that these AI applications are widely regarded as transformative tools that have impacted how teaching and learning occur. This study specifically focused on Generative AI, Reinforcement Learning (RL), and adaptive learning AI tools and their application in learning entrepreneurial skills by business education undergraduates. These AI tools can also be applied to learn abilities to generate creative business ideas based on one's interests and market needs, describe products, marketing strategies, manage social media to increase sales, and campaign for business using e-mail.

Furthermore, the findings of the study indicated that lecturers do not differ in their mean responses on how the types of AI tools required to teach learners lead to digital entrepreneurship skills development based on their years of experience. The finding concurs too with the opinions of Ukata and Okeke (2023), Ezenwafor and Ukata (2022b), and Ukata and Nmehielle (2022) who claimed that teaching experience and age are among the factors that influence lecturers' knowledge and skills on exploring the power of AI tools which usually lead to effective and efficient digital entrepreneurship skills development, because, younger lecturers may possess them than older ones.

The fact that all the lecturers indicated that educational attainment, teaching experience and age are factors that influence the utilisation of AI tools by the lecturers to lead to effective and efficient digital entrepreneurship skills development shows that both older and younger lecturers with the best academic qualifications and experience should be employed to teach digital entrepreneurship skills development courses to enable learners to acquire the skills for the global workplace.

Conclusion

Based on the findings that emanated from the discussions of the study, it was concluded that if the various learners are taught all the AI tools, it will lead to effective and efficient digital entrepreneurship skills development in Business and Entrepreneurship Education, positively transform the programme, leading to AI skills development and enabling the learners to acquire the needed employability skills for the global workplace. Additionally, educational attainment and years of teaching experience played vital roles in exploring the power of AI tools for effective and efficient digital entrepreneurship skills development for employability and possible job creation. Furthermore, because the needed AI employability skills will be acquired by learners if included and taught to learners properly, it will assist in reducing the high rate of unemployment among graduates in Rivers State in particular and Nigeria. Finally, it was concluded that it will be very difficult to teach learners AI tools for effective and efficient digital entrepreneurship skills development without better educational attainment and great experience and youthful energy to deliver the course content.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:

1. AI tools should be included during the teaching of Business Education and Entrepreneurship courses through yearly internal curriculum review by lecturers in collaboration with the authorities of their various institutions. Federal, state and local governments should provide enough funding and procurement of AI equipment (Smart assistants (e.g., Business Simulations, Market Research and Trend Analysis, Based Mentorship and Networking, Pitching and Funding, ChatGPT, Grammarly, QuillBot, and Snapchat) to enable lecturers and students to access them for a better teaching and learning experience. Heads of institutions running Business Education and Entrepreneurship programmes should fund the procurement of AI facilities via internally generated revenue.
2. Since whatever knowledge one acquires remains with the person, the Business Education and Entrepreneurship lecturers should make personal sacrifices from their earnings and engage in AI tools and training through online and offline short courses to effectively teach digital entrepreneurship skills development as well as sustain and remain relevant in their areas of operations. Tertiary institutions running Business Education should send lecturers for specialised AI tool training to build the needed competencies, since the training may be too expensive for lecturers to bear.
3. Since the level of educational attainment and years of experience play vital roles in identifying the types of AI tools to be explored with benefits for effective and efficient digital entrepreneurship skills development, younger Business Education and Entrepreneurship Educators with the required academic qualifications and years of experience should be employed by institutions running the programme. These will support the effective implementation of AI tool skills and transfer them to learners, helping them acquire the employability skills needed to reduce high rates of unemployability and unemployment.

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