

VOCATIONAL AND TECHNICAL EDUCATION JOURNAL

Print - ISSN: 2734-2697, Online: 2734-2700

2024, Vol. 4, No 1, 73-81.

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Website: www.votej.com.ng

VOTEJ

Leveraging Technological Innovation: Perceived Effects of Technology Integration on Career Readiness among Entrepreneurship Education Students and Graduates in South-East Nigeria

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Abstract

This paper determined the perception of entrepreneurship students and graduates in South-East, Nigeria on how the integration of technology into their education influences their readiness for career in entrepreneurship. Descriptive survey design was used to conduct the study. Population comprised 194 respondents made up of 56 entrepreneurship education graduates and 138 entrepreneurship education students in public universities in south-east, Nigeria. A questionnaire was used to collect data. Frequency, percentage, mean and standard deviation were used in analysing the data collected. Findings indicate that entrepreneurship graduates and students agree that technology integration positively influence their readiness for career in entrepreneurship. It was also found that integrating technology in entrepreneurship education processes helps students develop digital literacy and critical soft skills for the 21st century. These finding underscore the need to integrate technology in the teaching and learning of entrepreneurship in universities and other tertiary institutions.

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Keywords: Entrepreneurship Education, Technology integration, Technology innovation, Digital Literacy, soft skills

Introduction

Universities are fundamental in the achievement of national goals, including the development of fast-growing businesses that spur national economic growth. They produce people who can generate new ideas and concepts (Louw & Moloi, 2013; Alemu, 2018) as well as those who can boost a nation's economy through their productivity (Akere & Iwayemi, 2023; Okebukola, 2021). Since university education is vital for economic enhancement, Universities must deliberately create an environment where students can learn necessary job skills and acquire capacity to obtain employment or create jobs for themselves upon graduation. In recognition of the need for youths to develop the competence for entrepreneurship and self-dependence, the Nigerian Government, through its ministries and the Bank of Industry have implemented various entrepreneurship development programmes such as Youth Enterprise with Innovation in Nigeria (YouWin) and Graduate Entrepreneurship Fund (Kanu, 2020). Through these programmes, government provide entrepreneurship education and financial support for youths. In addition, in 2006, the Nigerian government mandated that all higher education institutions include entrepreneurship education as a compulsory course for all students. This initiative ensures that all students are getting entrepreneurship education, irrespective of their areas of specialisation.

At its core, entrepreneurship education starts with a mindset—a way of thinking and working that could assist any graduate to excel in their chosen career. Entrepreneurship education provides new perspectives and opportunities; reignites desire to succeed and fosters creativity and innovation. The United Kingdom National Council for Graduate Entrepreneurship Education (NCGE, 2024) define entrepreneurship education as a dynamic process that transforms people's perspectives, behaviours, and capacities to produce value in various situations. Thus, entrepreneurship education programmes are designed to equip students with knowledge, skills, attitudes, and values needed for making significant contributions to society (Daguplo, Capili, Estrella, & Bano, 2019). The programmes include comprehensive learning processes that go beyond traditional academic knowledge to equip learners with a diverse set of competencies and qualities that are essential for success in entrepreneurial endeavors. Accordingly, Hussain and Norashidah (2015) state that entrepreneurship education focuses not only on theoretical knowledge but also on practical skills and the development of positive mindset among graduates.

Graduates of entrepreneurship education are those who have completed formal education programmes focused on entrepreneurship. Daguplo, Capili, Estrella, and Bano (2019) note that entrepreneurship graduates have traditionally been regarded as a proactive tool to combat poverty and promote socio-economic advancement. Graduates of entrepreneurship education are usually creative, prepared to take calculated risks (Bae et al., 2014), and often driven by a desire to succeed. To help the students succeed upon graduation, educators need to teach entrepreneurship students by simulating real-world entrepreneurial experiences. Studies such as Giones and Brem (2017), and Zahra et al (2023) show that in real world situations, entrepreneurial processes and practices are increasingly driven by technology. Thus, integrating technology in entrepreneurship education can promote experiential learning that brings students closer to real world entrepreneurship and thus, enhance their readiness for successful career.

Unfortunately, many universities in South-East Nigeria are yet to sufficiently integrate modern technology into the teaching and learning of entrepreneurship. Empirical evidence on the effects of technology integration could be reliable inputs in formulating and implementing policies for enhancing technology integration in entrepreneurship education. Studies on entrepreneurship in Nigeria have focused on the assessment of progress, challenges and strategies for implementing entrepreneurship education (Nwosu, P., & Nweke, B. (2021; Okeke, T., Onah, L., & Ubah, S. (2022). There is limited knowledge about the impact of technology integration on career readiness. In this study, we determined the effects of integrating technology on career readiness of entrepreneurship education graduates. This study, therefore, answered the question: What are the effects of technology integration on the career readiness of entrepreneurship graduates in South East, Nigeria?

Technological innovation in entrepreneurship education

Identifying and seizing entrepreneurial opportunities in today's technology-driven world requires that graduates develop diverse skillset spanning a wide spectrum of digital literacy and knowledge management. Hargittai & Hsieh (2020) defined digital literacy as the ability to critically analyse online information, identify reputable sources, and use digital platforms for research, networking, and advertising. Also, they need digital

literacy for effective use of technology and digital tools. This involves knowledge of computers, operating systems, productivity applications, internet usage, cybersecurity, and online communication (Bawden & Robinson, 2019). Entrepreneurship graduates need digital skills to gain insights into current and future business environments, make decisions, and drive strategic growth. Therefore, they need skills in using statistical software, data visualisation tools, and data mining. These skills will also help them to obtain, generate, analyse, and understand data (Hair et al., 2019). These graduates also need digital marketing skills to reach and engage target consumers in the digital marketplace. For targeted marketing campaigns, performance analysis, and ROI optimisation, digital marketing tools and platforms such as social media, email marketing, SEO, and analytics platforms must be used proficiently (Chaffey & Ellis-Chadwick, 2019). Digital marketing expertise can help entrepreneurship graduates get and retain new customers; improve consumer experiences; generate brand loyalty in this competitive world of technology (Kourouthanassis et al. 2023).

Given the fact that entrepreneurial activities are heavily driven by technology, effective education of entrepreneurship students should leverage technology innovation. Technology innovation is the process of using technology to make major improvements on a product or process. In entrepreneurship education, technology innovation is the integration of new digital resources and methods including artificial intelligence (AI), big data, and blockchain to improve the teaching and learning process in entrepreneurial programmes (Chukwuma and Ugochukwu, 2023). Integrating technology in educational processes allow students to gain experiential learning that prepares them for a career in a digital world. Similar to technology innovation, Technology integration in entrepreneurship education is the use of technologically driven teaching methods involving approaches such as virtual incubation programs, business simulations, and experiential learning (Eze & Onuoha, 2023). Technology integration is important because in the current digital era, where disruption is the norm and technological innovation drives firm transformation, entrepreneurship graduates must possess a deep understanding of emerging technologies and their implications for entrepreneurship.

To integrate technology, entrepreneurship programmes can leverage a wide range of digital tools and platforms to make learning interactive, interesting, flexible and accessible. In addition to classroom lectures, teachers can use internet

resources, simulations, and virtual reality to represent real-world entrepreneurial settings and challenges (Fayolle & Gailly, 2018). According to Al-Samarraie, Lamsfus, Olfman (2020), online learning management systems (LMS) such as Moodle and Google Classroom assist teachers to organise and deliver course contents, paperwork, and evaluations. Interactive multimedia resources like films, podcasts, and webinars enhance learning by presenting varied views and real-life case studies (Jagtap & Pandey, 2021). Additionally, entrepreneurship educators in developed world are using business model canvas tools, crowdfunding platforms, social media networks, virtual company simulations, AI-driven analytics, and blockchain-based financial literacy to help their students develop practical skills, participate in entrepreneurial activities and data-driven market research programs which offer students practical experience, enabling them to test company concepts in a low-risk setting (Ozdemir, Demir, & Sezgin, 2021). Technology in entrepreneurship education improves student engagement, collaboration, and creativity, preparing them for the dynamic, digital-driven entrepreneurial landscape (Kuckertz et al., 2020). Digital technologies and platforms allow students to learn at their own pace and access resources anytime, anyplace (Albors-Garrigós et al., 2023). In this digital age, entrepreneurship students and its graduates all over the world need those digital literacy, critical thinking, and problem-solving skills, which technology-enabled innovation fosters (Bagheri et al., 2019). Beyond fostering these important soft skills such as critical thinking and collaborative problem solving, technological innovation in entrepreneurship education equips students with ability to join and thrive in the modern business landscape. For instance, that technological innovation in entrepreneurship education fosters tech-based business ecosystems that promote collaboration between universities, industry, and government (Obi and Nnadi, 2024) and increases graduates' ability to obtain employment in technology-oriented sectors (Uzochukwu et al., 2024).

Methodology

This study was conducted in south east Nigeria, using the survey research design. Participants were 194 respondents made up of 56 entrepreneurship education graduates who have completed their entrepreneurship programs and 138 entrepreneurship education students, both from public universities in South-East Nigeria.

The instrument used for data collection was an 11-item questionnaire developed by the researchers based on literature review. The questionnaire had two parts (1 and 2). Part 1 elicited information about

respondents' status (graduate or student) while part 2 elicited information on the perceived effects of technology integration on the career readiness of entrepreneurship education graduates. part two consisted of sections A and B. Section A comprised 7 questions on a four-point scale with corresponding values of 4 (Strongly Agree), 3 (Agree), 2 (Disagree), and 1(Strongly Disagree). The respondents were required to indicate their level of agreement with each of the item statements. Part two consisted of 2 dichotomous questions that required yes/no responses. The draft instrument was given to three experts in entrepreneurship education for validation.

Their comments and suggestions were used to revise the questionnaire. The internal consistency of the instrument was established using Cronbach Alpha which yielded 0.86 reliability coefficient.

The questionnaire was distributed through WhatsApp app and email by the researchers. The entire questionnaire distributed were completed and returned. Data on respondents' demographic information as well as the dichotomous questions were analysed using frequency and percentages while data gathered with Section A of the questionnaire was analysed using mean and standard deviation. Data analysis was done with IBM SPSS Statistics 27.0.

Results

Table 1: Mean and standard deviation of the responses on the influence of technology integration on the career readiness among entrepreneurship graduates in South-East Nigeria

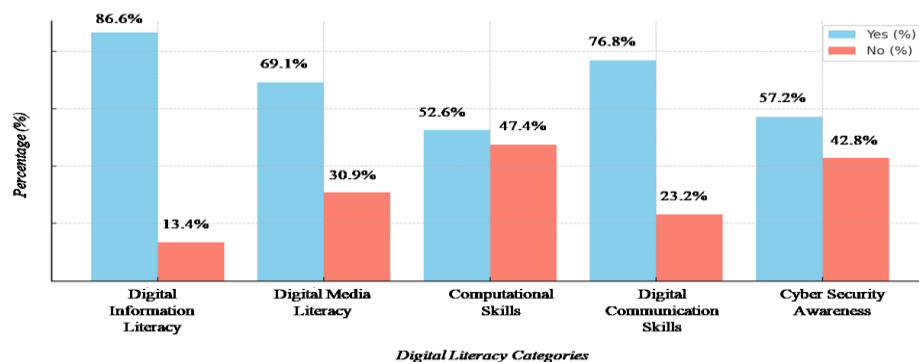
S/N	Items	Mean	SD	Remark
Technology integration in my educational process:				
1	Increased my ability to adapt to digital advancements in entrepreneurship	3.48	0.80	A
2	Makes me feel adequately prepared to leverage technology for entrepreneurial ventures.	3.43	0.83	A
3	Enhanced my ability to apply technology in real life business situations.	3.59	0.64	SA
4	Increased my ability to recognize and exploit emerging business opportunities	3.62	0.70	SA
5	Makes me feel prepared for entrepreneurship in a digital era.	3.61	0.61	SA
6	Increased my creativity and innovation in entrepreneurship	3.65	0.60	SA
7	Increases my competence in using emerging technologies	3.42	0.90	A
Cluster Mean and SD		3.54	0.72	SA

Valid N (listwise) 194. SD = Standard Deviation, A=Agree, SA= Strongly Agree

The data presented in Table 1 shows that respondents agree that technology integration in their education process influenced them in the stated ways, with means ranging from 3.42 to 3.65 and a cluster

mean of 3.54. The standard deviations which range from 0.60 to 0.90 indicate some variance in responses, but not a great deal of it.

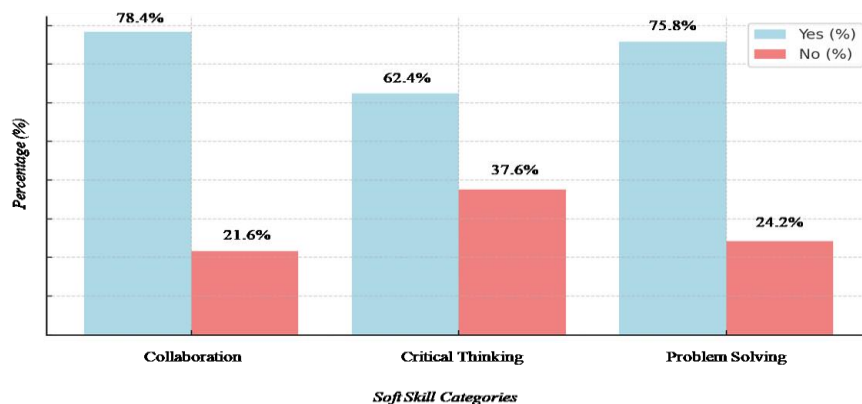
Analysis of entrepreneurship education students' and graduates' responses to the question
 –Did technology integration in your educational process help you develop the following digital literacy categories?



The data presented in Figure 1 indicate that for each digital literacy category, more than half of the respondents indicated that technology integration in their educational processes helped them develop the skills. However, more respondents (over three quarters) reported that technology integration helped them develop digital information literacy (86.6%)

and digital communication skills (76.8%). Digital media literacy followed with 69.1% of respondents reporting that technology integration helped them develop the literacy. Slightly more than half of the respondents reported that technology integration helped them develop cyber security awareness (57.2%) and computational skills (52.6%).

Analysis of entrepreneurship education students' and graduates' responses to the question
 –Did technology integration in your educational process help you develop the following soft skills?



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Discussion of findings

The study sought to determine the perceived influence of technology integrated in entrepreneurship education on the career readiness of the entrepreneurship graduates in South-East Nigeria. The findings indicate a positive influence as majority of respondents concur that the incorporation of technology and innovation in their education enhanced their preparedness and entrepreneurial mindset. This is line with the finding of Edeh, (2017) who posited that technologies are needed for successful entrepreneurship endeavours. This study also agrees with Ezetoha and Ohaneme (2020) who found that technology-supported entrepreneurship education model demonstrates advantages of

integrating technology within the Nigerian higher education system, it provides students with the necessary skills and knowledge to excel in entrepreneurship. The authors stated that entrepreneurship education that incorporates technology equips students with the necessary skills and knowledge to thrive in a rapidly evolving business landscape. Furthermore, most respondents agreed that integrating technology helped them to develop digital literacy. This finding is in line with Saroj Kumari, Bhumika (2024). In addition, it was found that integrating technology helped learners improve soft skills including collaboration, critical thinking and problem solving, which is in line with the findings of Chen, 2023. According to Chen, Digital learning tools provide interactive and immersive experiences that engage students and foster soft skills acquisition alongside technical knowledge. These soft skills are vital for successful entrepreneurship in a digital and globalised world. The findings underscore the importance of continuous improvements and practical engagements in entrepreneurship education to keep pace with the evolving demands of the digital age. Hence, this research demonstrates that the deliberate incorporation of technology into entrepreneurship education programmes in Nigeria enhances their students' learning, readiness for careers, and entrepreneurial aptitude.

Conclusion

The purpose of the study was to examine the effects of technology integration on career readiness among entrepreneurship graduates in South-East Nigeria. From the findings of the study, the researchers concluded that integrating technology and innovation into entrepreneurship education holds immense significance for empowering their graduates to succeed as entrepreneurs in the rapidly evolving digital landscape of developing economies. That leveraging technology, entrepreneurship education programs provide students with access to digital tools, online resources, and interactive platforms that facilitate learning, collaboration, and experimentation. More so, fostering a culture of innovation enables students to develop creative thinking, problem-solving skills, and adaptability to navigate the complexities of the digital era. Integrating technology and innovation into entrepreneurship education has the potential to democratize access to entrepreneurial opportunities and bridge the digital divide in developing economies. By equipping students with digital competencies, practical skills, adoption of certain

technologies and real-world experiences, entrepreneurship programs can empower students from diverse backgrounds to harness technology, create value, and drive economic growth in their communities.

Universities that will effectively incorporate technology into entrepreneurship curriculum will witness improvement in students' engagement, elevate creativity, and improve problem-solving abilities. In all, technological innovation is crucial for success of entrepreneurship graduates in this digital era.

Recommendation

Based on the findings and conclusions presented in this paper, the following recommendations are proposed to enhance entrepreneurship education in developing economies:

1. Schools that offer entrepreneurship education programs should prioritize the integration of technology into curriculum design, delivery, and assessment processes. This includes leveraging digital tools, online platforms, and multimedia resources to enhance the learning experience and provide students with access to real-world entrepreneurial scenarios. Offer specialized courses, workshops, certifications and internship programmes to equip students with the digital competencies needed to succeed in the digital era.
2. Lecturers in entrepreneurship education should ensure that their students are getting enough hands-on experiences, and experiential learning opportunities to apply theoretical knowledge in real-world contexts through partnering with industry stakeholders, startups, and entrepreneurial ecosystems to facilitate mentorship programs, and incubation support for aspiring entrepreneurs.
3. The regulatory bodies responsible for designing curriculum should be evaluating the incorporation of digital literacy, data analysis skills, and proficiency in using digital marketing tools into entrepreneurship education curricula on each session.

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