

Impact of Computer Education on Entrepreneurship Skills among Polytechnic College of Education Technical Graduates in Southwest Nigeria Economic Frameworks

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Abstract

This study aimed to evaluate the impact of computer education on entrepreneurship skills among graduates from Polytechnics and Colleges of Education in Southwest Nigeria. The main objectives were to assess the relationship between exposure to computer education and the ability of graduates to initiate entrepreneurial ventures, and to identify differences in entrepreneurial skills across various technical disciplines. The study was guided by four research questions. The research employed an Ex-post-facto design, with a total population of 2,850 graduates from FCET Akoka, YABATECH, and The Polytechnic Ibadan. The sample consisted of 450 graduates, with 150 from each institution. A structured 26-item questionnaire was used for data collection, and the instrument was validated for content and face validity. The reliability coefficient of 0.86 was established using the Split-half method. Data were analyzed using descriptive statistics and inferential statistics, including Spearman's Rank Order Correlation and One-Way ANOVA. The study found a significant positive relationship between computer education and the ability to initiate entrepreneurial ventures, with a strong correlation observed. Furthermore, significant differences in entrepreneurial skills were found across graduates from the three institutions. It was concluded that computer education significantly impacts entrepreneurship development. The study recommended the integration of ICT into all technical disciplines, enhanced policy implementation for entrepreneurship support, and the promotion of gender inclusivity in ICT training programs.

Keywords: Computer Education, Entrepreneurship, Nigeria, Polytechnic Graduates, and Technical Education

Introduction

In recent years, Nigeria has grappled with escalating youth unemployment and underemployment, prompting a critical examination of the nation's educational strategies. The integration of entrepreneurship education into tertiary institutions, particularly polytechnics and colleges of education, has been a strategic response to equip graduates with the skills necessary for self-reliance and job creation (Abubakar, 2018). This initiative aligns with national efforts to stimulate economic growth and reduce poverty through the development of entrepreneurial competencies.

Computer education has emerged as a pivotal component in modern curricula, offering students essential skills in digital literacy, problem-solving, and innovation. These competencies are increasingly vital in today's technology-driven business environment. Studies indicate that the integration of computer education enhances students' capacity to develop and manage entrepreneurial ventures effectively (Chinwe-Edozie, 2024). The synergy between computer education and entrepreneurship training is particularly significant in technical education, where practical skills are paramount.

Entrepreneurship skills encompass a broad spectrum of abilities, including opportunity recognition, business planning, financial management, and strategic decision-making. In the context of technical education, these skills enable graduates to transform their technical knowledge into viable business opportunities. However, there is a pressing need to assess how effectively these skills are being imparted within existing educational frameworks, especially considering the dynamic nature of the global economy (Nwosu, 2020). The Nigerian government has implemented several economic policies aimed at promoting entrepreneurship and self-reliance among youths. Notably, the National Development Plan (2021–2025) and the National Digital Economy Policy and Strategy (2020–2030) emphasize digital skills acquisition and support for small and medium enterprises (SMEs). These policies provide a conducive environment for integrating computer education with entrepreneurship training, thereby fostering innovation and economic diversification (Federal Government of Nigeria, 2021).

Despite these initiatives, challenges persist in aligning educational outcomes with labor market demands. There is a growing concern that graduates, particularly from technical institutions, may lack the requisite skills to thrive in the entrepreneurial landscape. This disconnect underscores the importance of evaluating the effectiveness of current educational practices and their alignment with national economic objectives. Southwest Nigeria, comprising states such as Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti, hosts numerous polytechnics and colleges of education. These institutions produce a significant number of technical graduates annually, making the region an ideal setting to assess the interplay between computer education, entrepreneurship skills, and economic policies. The diverse economic activities and educational infrastructure in the region provide a rich context for this study.

This study focuses on graduates from departments such as Computer Science, Electrical/Electronics, Business and Technical Education, and Vocational/Entrepreneurship Education who completed their programs within the last 3–5 years. These individuals represent a critical segment of the workforce poised to leverage technical and entrepreneurial skills for economic advancement. Understanding their experiences and outcomes can offer valuable insights into the efficacy of current educational and policy frameworks. By assessing the impact of computer education on entrepreneurship skills among technical graduates, this study aims to inform curriculum development, policy formulation, and educational practices. The findings could guide stakeholders in enhancing program effectiveness and aligning educational outcomes with national economic objectives. Furthermore, the study seeks to identify challenges and opportunities in integrating computer education with entrepreneurship training in technical institutions.

The primary objectives of this study are to: evaluate the extent to which computer education influences the acquisition of entrepreneurship skills among technical graduates; assess the alignment of current economic policies with educational practices in fostering entrepreneurship; and identify challenges and opportunities in integrating computer education with entrepreneurship training in technical institutions.

Statement of the Problem

Despite concerted efforts by the Nigerian government to integrate computer and entrepreneurship education in tertiary institutions, many graduates continue to face difficulties establishing viable entrepreneurial ventures. The technical and vocational education sector, particularly in polytechnics and colleges of education, is intended to foster self-reliance and innovation through skill acquisition in line with national development goals. However, the effectiveness of these programs under prevailing economic policy frameworks remains largely unverified. Observations and anecdotal evidence suggest a persistent mismatch between the computer-based entrepreneurial skills acquired by graduates and the dynamic demands of Nigeria's entrepreneurial ecosystem. The lack of empirical assessment of how computer education translates into actual entrepreneurial competence under current economic realities in the country presents a critical gap. This concern necessitates a rigorous investigation into whether these education efforts have had the desired impact on graduates' entrepreneurial readiness and performance, particularly within the socio-economic context of Southwest Nigeria.

Research Objectives

1. To determine the extent to which computer education influenced entrepreneurship skills acquisition among technical graduates of polytechnics and colleges of education in Southwest Nigeria.
2. To examine the relationship between graduates' exposure to computer education and their ability to initiate entrepreneurial ventures.
3. To assess how national economic policy frameworks have facilitated or constrained the entrepreneurial application of computer-based skills acquired in technical institutions.
4. To identify differences in entrepreneurship skill levels among graduates based on their academic discipline (e.g., Computer Science, Electrical/Electronics, Vocational/Entrepreneurship Education).

Research Questions

1. To what extent did computer education influence the acquisition of entrepreneurship skills among technical graduates in Southwest Nigeria?

2. What is the relationship between graduates' exposure to computer education and their ability to start entrepreneurial ventures?
3. How have economic policy frameworks affected the entrepreneurial application of computer-related skills by graduates?
4. Are there significant differences in the entrepreneurship skills of graduates across different technical education disciplines?

Null Hypotheses

1. There is no significant relationship between exposure to computer education and the ability of technical graduates to initiate entrepreneurial ventures.
2. There is no significant difference in entrepreneurship skills among graduates from different technical disciplines in polytechnics and colleges of education in Southwest Nigeria.

Methodology

This study adopted an *ex-post-facto research design*, which was deemed appropriate because the variables of interest such as exposure to computer education and the development of entrepreneurship skills had already occurred and could not be manipulated by the researcher. The design allowed for the analysis of existing differences and relationships among the graduates based on their prior educational experiences and subsequent entrepreneurial outcomes. By investigating these relationships retrospectively, the study was able to assess the impact of educational programs and policy environments without altering or influencing the participants' prior conditions. This design also ensured ethical feasibility, as it relied on naturally occurring data from graduates who had already completed their programs in the past 3 to 5 years.

The target population for this study comprised graduates of technical programs from three tertiary institutions in Southwest Nigeria: Federal College of Education (Technical), Akoka; Yaba College of Technology (YABATECH); and The Polytechnic, Ibadan. These institutions were selected due to their long-standing commitment to technical and vocational education and their robust output of graduates in the relevant fields. The study focused on individuals who completed their programs within the last three to five years (2019–2023) from departments such as Computer Science,

Electrical/Electronics Engineering, Business and Technical Education, and Vocational/Entrepreneurship Education. These graduates were considered to have had sufficient exposure to both computer and entrepreneurship education, and some would have entered the workforce or entrepreneurial ventures during this period. Based on institutional graduate data and departmental records (YABATECH, 2022; FCET Akoka, 2022; Polytechnic Ibadan, 2022), the estimated population of eligible graduates across the three institutions within the specified period was approximately 2,850. This figure included an estimated 900 from YABATECH, 950 from The Polytechnic, Ibadan, and 1,000 from FCET Akoka, drawn from the identified departments. These numbers were obtained from convocation records and alumni directories accessible from the respective registrars and alumni offices of the institutions.

A sample size of 450 graduates was selected for the study. This sample was evenly distributed across the three institutions, with 150 participants from each institution, comprising 75 male and 75 female graduates. The study employed a multi-stage sampling strategy, combining purposive, convenience, and stratified random sampling techniques. The purposive sampling was used to select the institutions and relevant departments based on their active technical programs and accessibility of graduate records. Convenience sampling facilitated the selection of participants who were easily reachable through alumni platforms, social media groups, departmental contacts, and professional networks. Finally, stratified random sampling was employed to ensure representation across gender and institutional affiliation. The strata used included institution (FCET Akoka, YABATECH, Polytechnic Ibadan), gender (male and female), and academic discipline.

The main instrument used for data collection in this study was a 26-item structured questionnaire developed by the researchers based on the research objectives and questions. The questionnaire was divided into five distinct sections. Section A contained eight items designed to gather the bio-data of respondents, including demographic variables such as gender, institution attended, year of graduation, department, current employment status, type of business (if self-employed), duration of entrepreneurial activity, and use of digital tools in business. Sections B to E each comprised five items structured on a 4-point Likert scale, with response options: *Strongly Agree* ($SA = 4$), *Agree* ($A = 3$), *Disagree* ($D = 2$), and *Strongly Disagree* ($SD = 1$). These sections were specifically constructed

to address the four research questions of the study. Section B captured data related to the extent to which computer education influenced the acquisition of entrepreneurship skills. Section C assessed the relationship between computer education and the ability to initiate entrepreneurial ventures. Section D explored the impact of current economic policy frameworks on the entrepreneurial use of computer-related skills, while Section E identified variations in entrepreneurship skills across different academic disciplines. The items in each section were clearly worded, concise, and aligned with the constructs under investigation.

To ensure the instrument's relevance and accuracy in measuring the intended constructs, the 26-item questionnaire underwent both face and content validation. The validation process involved a critical review by three experts with advanced experience in the areas of Economic Policies, Computer and Information Technology Studies, and Educational Evaluation and Research Methods. Their suggestions were incorporated to refine the clarity, structure, and appropriateness of the questionnaire items. For reliability estimation, the instrument was pilot-tested using a sample of 30 graduates (10 from each of the selected institutions) who met the eligibility criteria but were excluded from the main study sample. The data collected from the pilot were subjected to a split-half reliability analysis. The correlation between the two halves was computed and adjusted using the Spearman-Brown Prophecy formula, yielding an overall reliability coefficient of 0.86. This value indicated a high level of internal consistency and reliability, affirming the instrument's suitability for use in the main study.

The validated 26-item questionnaire was administered to the 450 targeted respondents from the three selected institutions: Federal College of Education (Technical), Akoka; Yaba College of Technology, Lagos; and The Polytechnic, Ibadan. A combination of online and direct in-person data collection methods was employed to ensure optimal reach and response rates. The researchers utilized existing WhatsApp alumni groups, which had remained active since the participants' graduation, to distribute the electronic version of the questionnaire. In addition, face-to-face administration was carried out for participants who could be contacted directly within proximity. Over a 10-week data collection period, a total of 306 properly completed questionnaires were retrieved, representing a response rate of 68%. Among these, 148 responses came from FCET Akoka, 88 from YABATECH, and 70 from The Polytechnic, Ibadan.

The data collected were analyzed using appropriate statistical tools. To answer the research questions, descriptive statistics such as frequency counts, percentages, mean scores, and standard deviations were used to summarize the responses. For testing the null hypotheses, Spearman's rank-order correlation was used to assess the relationship between computer education and entrepreneurial venture initiation (Hypothesis 1), given the ordinal nature of Likert scale data and the absence of experimental manipulation. Additionally, One-Way Analysis of Variance (ANOVA) was applied to test for significant differences in entrepreneurship skills among graduates from different technical disciplines (Hypothesis 2). The significance level was set at 0.05.

Results

Research Question 1: To what extent has computer education influenced the acquisition of entrepreneurship skills among technical graduates in Southwest Nigeria?

Table 1: Mean and Standard Deviation of Responses on the Influence of Computer Education on Entrepreneurship Skills Acquisition (N = 306)

S/N	Item	Mean (\bar{x})	SD	Rank	Interpretation
1	Computer training improved my business planning skills.	3.31	0.77	2	Agreed
2	I use computer applications in managing my business.	3.36	0.72	1	Agreed
3	Computer knowledge helped me identify entrepreneurial opportunities.	3.29	0.81	3	Agreed
4	ICT skills acquired in school are useful in my current work.	3.27	0.83	4	Agreed
5	Computer literacy has boosted my confidence as an entrepreneur.	3.23	0.86	5	Agreed

Respondents generally agreed that computer education significantly contributed to their entrepreneurial skills. The highest-ranked item (mean = 3.36) reflects the practical application of computer tools in managing businesses, while all other items scored above 3.20, showing consistent positive perceptions. The findings indicate that computer education exerts a significant positive influence on the acquisition of entrepreneurial skills among technical graduates in Southwest Nigeria.

Research Question 2: What is the relationship between computer education and entrepreneurial initiative among these graduates?

Table 2: Mean and Standard Deviation of Responses on the Relationship Between Computer Education and Entrepreneurial Initiative (N = 306)

S/N	Item	Mean (\bar{x})	SD	Rank	Interpretation
1	Computer education helped me start my own business.	3.24	0.84	4	Agreed
2	Exposure to ICT tools made business startup easier.	3.35	0.75	1	Agreed
3	My entrepreneurial drive increased after learning computer applications.	3.28	0.79	3	Agreed
4	I rely on digital skills to manage entrepreneurial tasks.	3.32	0.73	2	Agreed
5	Computer skills made it easier to implement business ideas.	3.22	0.87	5	Agreed

Participants strongly agreed that computer education enhanced their entrepreneurial initiative. The item with the highest mean (3.35) emphasized how ICT tools simplified the startup process. The results reveal a positive relationship between computer education and entrepreneurial initiative among technical graduates in Southwest Nigeria.

Research Question 3: How do current Nigerian economic policy frameworks influence computer-based entrepreneurship among technical graduates?

Table 3: Mean and Standard Deviation of Responses on the Influence of Economic Policies on ICT-Based Entrepreneurship (N = 306)

S/N	Item	Mean (\bar{x})	SD	Rank	Interpretation
1	Government economic policies have influenced how I use computer skills.	3.20	0.90	4	Agreed
2	Digital entrepreneurship is encouraged under current economic policies.	3.27	0.82	2	Agreed
3	I feel supported by policies to use ICT in my business.	3.25	0.84	3	Agreed
4	Economic realities make digital skills a necessity.	3.34	0.79	1	Agreed
5	Policy environment enables tech-driven enterprises.	3.19	0.87	5	Agreed

Graduates generally perceived that the economic policy environment supports the use of ICT for entrepreneurship. The highest-ranked statement (mean = 3.34) points to economic realities making digital skills indispensable. The findings indicate that current Nigerian economic policy frameworks positively influence computer-based entrepreneurship among technical graduates by promoting ICT use, encouraging digital entrepreneurship, and making computer-based business practices essential in the prevailing economic context.

Research Question 4: Are there differences in the entrepreneurship skills acquired by graduates based on their technical disciplines?

Table 4: Mean and Standard Deviation of Responses on Differences in Entrepreneurship Skills by Academic Discipline (N = 306)

S/N	Item	Mean (\bar{x})	SD	Rank	Interpretation
1	Graduates from Computer Science show more entrepreneurial competence.	3.30	0.80	2	Agreed
2	Discipline affects confidence in using digital tools for business.	3.36	0.73	1	Agreed
3	Entrepreneurial skills vary by department of graduation.	3.26	0.83	3	Agreed
4	My training prepared me better compared to others from different fields.	3.22	0.85	5	Agreed
5	Some departments offer more practical digital skills than others.	3.25	0.78	4	Agreed

Responses suggest that entrepreneurial skills among graduates differ by academic discipline, with the highest agreement (mean = 3.36) linked to confidence in using digital tools. Graduates from Computer Science and related fields were perceived to possess higher entrepreneurial competence, likely due to more ICT-intensive training. This highlights disparities in curriculum design and its effect on entrepreneurship readiness.

Null Hypothesis 1 (H_{01}): There is no significant relationship between exposure to computer education and the ability of technical graduates to initiate entrepreneurial ventures.

Table 1: Spearman's Rank Correlation Between Exposure to Computer Education and Entrepreneurial Initiatives (N = 306)

Variable	Mean (\bar{x})	Rank Sum (Rs)	Correlation Coefficient (rs)	Interpretation
Exposure to Computer Education	3.31	2.0	0.76	Strong Positive Correlation
Ability to Initiate Entrepreneurial Ventures	3.30	2.1		

The Spearman’s Rank Order Correlation coefficient ($rs = 0.76$) shows a strong positive relationship between exposure to computer education and the ability of graduates to initiate entrepreneurial ventures. This indicates that as exposure to computer education increases, the ability to initiate entrepreneurial activities also increases, suggesting that computer education plays a crucial role in empowering technical graduates to start their own businesses.

Null Hypothesis 2 (H_{02}): There is no significant difference in entrepreneurship skills among graduates from different technical disciplines in polytechnics and colleges of education in Southwest Nigeria.

Table 2: ANOVA Test for Differences in Entrepreneurial Skills Among Graduates from FCET Akoka, YABATECH, and The Polytechnic Ibadan (N = 306)

Institution	Mean (\bar{x})	Standard Deviation (SD)	F-statistic	p-value	Interpretation
FCET Akoka	3.35	0.70			
YABATECH	3.28	0.80	3.45	0.034	Significant Difference
The Polytechnic, Ibadan	3.22	0.78			

The ANOVA results show a statistically significant difference ($F = 3.45$, $p = 0.034$) in entrepreneurship skills among graduates from the three institutions. FCET Akoka graduates reported the highest mean entrepreneurial skills (3.35), followed by YABATECH (3.28), and then The Polytechnic, Ibadan (3.22). The p-value of 0.034 is less than the 0.05 significance level, indicating that there is a significant difference in entrepreneurial skills among the graduates of these institutions.

Discussion of the Findings

The first major finding of this study, the positive impact of computer education on entrepreneurial skills, aligns with global research highlighting the significance of ICT skills in business development.

According to Olaniyan and Akinleye (2021), the integration of computer skills into vocational and technical education programs is essential for fostering innovation and entrepreneurship. Graduates in Southwest Nigeria who received more exposure to ICT tools demonstrated enhanced business planning and management capabilities. This finding underscores the need for policy and curriculum reforms to further embed ICT in entrepreneurship education to ensure that future graduates can thrive in a digital economy.

The study also found a strong relationship between computer education and entrepreneurial initiative. This supports findings by Olatunji et al. (2022), who argued that exposure to technology significantly boosts entrepreneurial self-efficacy, motivating individuals to pursue business ventures. In the context of Nigeria, where unemployment rates are high, this is especially pertinent, as it highlights the role of computer education in promoting self-reliance and business creation among graduates. The positive correlation observed suggests that enhancing ICT education could serve as a strategic tool in addressing Nigeria's youth unemployment challenge. The influence of current economic policies on ICT-based entrepreneurship was moderately acknowledged by the respondents. While respondents felt that the general economic environment was conducive to tech-driven ventures, the direct impact of governmental policies was less evident. This is consistent with findings from Adebayo and Oni (2019), who noted that while policies have been crafted to support digital entrepreneurship, challenges remain in translating policy intentions into practical, accessible support for young entrepreneurs. This gap between policy and practice calls for a more robust implementation strategy and better infrastructure to support digital entrepreneurship at all levels.

Differences in entrepreneurial skills among graduates of different disciplines were another key finding. Computer Science graduates showed higher entrepreneurial skills, which can be attributed to their greater exposure to ICT tools. This finding echoes the study by Ojo (2020), which observed that graduates of ICT-intensive programs tend to have a greater entrepreneurial mindset due to their familiarity with digital technologies. This highlights a need for educational institutions to re-examine their curricula to ensure that all technical disciplines receive adequate training in entrepreneurship, regardless of the specific field of study. Lastly, the statistical significance of the findings, as shown through Spearman's rank correlation and One-Way ANOVA, reinforces the importance of computer

education and institutional factors in shaping entrepreneurial outcomes. These results suggest that while there is a general need for computer education, the type of institution and curriculum can also significantly influence entrepreneurial skill development. Further research could explore how specific curriculum content and teaching methods impact entrepreneurial success. The implications for policy are clear: there is a need to integrate ICT training more deeply into all technical disciplines to create a more entrepreneurial-minded graduate workforce.

Conclusion

The purpose of this study was to evaluate the impact of computer education on the development of entrepreneurial skills among graduates from Polytechnics and Colleges of Education in Southwest Nigeria. The study specifically aimed to examine the relationship between exposure to computer education and the ability to initiate entrepreneurial ventures, as well as the differences in entrepreneurial skills across various technical disciplines. The study found that exposure to computer education significantly enhances entrepreneurial abilities, contributing to the growing interest in self-employment among graduates.

The study also revealed significant differences in entrepreneurial skills among graduates from different disciplines, with those from Computer Science and related fields demonstrating higher entrepreneurial skills. These findings emphasize the importance of ICT integration in vocational education, suggesting that graduates from these fields are better equipped to leverage digital tools for business creation and management. This highlights the need for further policy focus on enhancing ICT training across all technical disciplines in Nigeria. Additionally, the study explored the influence of current Nigerian economic policies on ICT-driven entrepreneurship. While the general economic environment was conducive to entrepreneurship, the study revealed that the practical effects of these policies on young entrepreneurs remained unclear. This underscores the need for stronger alignment between policy frameworks and the actual support available to emerging entrepreneurs.

In conclusion, the findings emphasize the critical role of computer education in fostering entrepreneurship among technical graduates in Southwest Nigeria. It also calls for more targeted

interventions by policymakers and educational institutions to better equip graduates with the skills needed for entrepreneurship in the digital age.

Recommendations

- 1. Curriculum Integration:** Educational institutions should integrate more ICT-related entrepreneurship training into their curricula to ensure that graduates are equipped with the digital skills necessary for business creation and management.
- 2. Policy Implementation:** Government policies aimed at supporting entrepreneurship should be more effectively implemented, ensuring that economic policies are aligned with practical support systems that enable graduates to pursue entrepreneurial ventures.
- 3. Institutional Collaboration:** Universities, polytechnics, and colleges of education should collaborate with industry players to provide students with real-world experience in digital entrepreneurship through internships, workshops, and practical projects.
- 4. Gender Inclusivity in ICT Training:** Gender-inclusive programs should be promoted in the technical and vocational education sectors to ensure that both male and female graduates have equal opportunities to develop entrepreneurial skills through ICT education.
- 5. Continued Monitoring and Evaluation:** Regular monitoring and evaluation of entrepreneurship education programs should be conducted to assess their impact on graduates and ensure that these programs are continuously updated to meet the evolving demands of the job market.

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