Robotic skills possessed by postgraduate Business Education students for employment generation in Rivers State

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Abstract
This study investigated the robotic skills possessed by postgraduate Business Education students for employment generation in Rivers State. Specifically, the study examined the extent to which postgraduate Business Education students possess programming, operational, design, troubleshooting, and automation application skills for employment generation. Two research questions guided the study, while two null hypotheses were tested at the 0.05 level of significance. The study adopted a descriptive survey research design. The population comprised 159 postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt. Since the population was manageable, the entire population was studied without sampling. Data were collected using a researcher-developed questionnaire titled Robotic Skills Possessed by Postgraduate Business Education Students for Employment Generation Questionnaire (RSPPBESEGQ). The instrument was validated by three experts in Business Education and Measurement and Evaluation, while its reliability was established using the Cronbach Alpha method. Mean and standard deviation were used to answer the research questions, whereas Analysis of Variance (ANOVA) was employed to test the hypotheses at the 0.05 level of significance. The findings revealed that postgraduate Business Education students possessed programming and operational skills to a high extent. The ANOVA results further showed significant differences in the mean responses of postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and University of Port Harcourt regarding all the robotic skills investigated; consequently, all two null hypotheses were rejected. The study concluded that postgraduate Business Education students possess substantial robotic skills capable of promoting employability, entrepreneurship, and employment generation. It was recommended, among others, that universities should strengthen robotics education through curriculum enhancement, continuous industry collaboration, and

increased practical learning opportunities to improve graduates' competencies for the technology-driven labour market.

Introduction

The 21st century is characterized by rapid technological advancement driven by the emergence of robotic is transforming virtually all sectors of the global economy, including education, business, and industry. These technologies have introduced new ways of performing tasks, solving problems, and creating value, thereby redefining the nature of work and the skills required for employment generation. Robotics and artificial intelligence have become major drivers of innovation, influencing automation, productivity, entrepreneurship, and business operations across organizations. As a result, the demand for robotics-related competencies has increased significantly, making them essential for university postgraduate Business Education students seeking employment opportunities and self-reliance in the modern workforce. Integrating robotics skills into university postgraduate Business Education is therefore essential for enhancing employment generation and meeting the demands of a technology-driven economy (Koko, Wogborma & Gabriel, 2025).

Globally, the integration of robotics and AI into workplaces has led to a transition from traditional labour-intensive activities to technology-driven and knowledge-based operations. Reports indicate that robotics and intelligent systems are not only transforming existing jobs but also creating new employment opportunities that require advanced technological and digital competencies. Recent studies reveal that while automation may reduce dependence on certain routine occupations, it is simultaneously generating millions of technology-oriented jobs that require specialized robotics skills. Similarly, the growing adoption of robotics across industries has increased the relevance of robotics competencies in recruitment, wages, innovation, and entrepreneurial development. This underscores the importance of equipping postgraduate Business Education students with robotics skills that can improve their employability and capacity for employment generation (Chiu, 2024).

In higher education, universities are increasingly recognized as important centres for developing the competencies needed in the digital economy. Lucas (2020) noted that education systems worldwide are undergoing transformation to align with the demands of the Fourth Industrial Revolution (4IR), which is characterized by the convergence of robotics, artificial intelligence, big data, automation, and the Internet of Things (IoT). Robotic technological advancements are reshaping teaching and learning processes, making it necessary for educational institutions to incorporate innovative and technology-oriented approaches into their curricula. Research has shown that robotics and AI significantly influence education by promoting practical learning, improving access to digital knowledge, and enhancing students' creative and problem-solving abilities. Furthermore, intelligent robotic systems are increasingly being integrated into classrooms and laboratories, providing students with practical exposure and technical skills relevant to modern workplaces. Every emerging technology introduces new dimensions of creativity, professionalism, and innovation, opening opportunities for students and preparing them for future career challenges. Many digital tools have also emerged to support research, communication, collaboration, information sharing, and knowledge creation in higher education (Ogundele, 2023).

Business Education, as a field of study, is particularly affected by these technological transformations because of its role in preparing students for participation in the business world. Traditionally, Business Education focused on managerial, accounting, marketing, and entrepreneurial competencies. However, the changing nature of business activities now requires the integration of robotics and digital competencies into Business Education programmes.

Postgraduate Business Education students, who are expected to occupy leadership and entrepreneurial positions in organizations, must therefore acquire advanced robotics skills that will enable them to function effectively in technology-driven business environments. These robotics skills include robot programming skills, automation and control system skills, Internet of Things (IoT) integration skills, human–robot interaction (HRI) skills, and cybersecurity awareness in robotic systems (Park, Oh & Kim, 2024).

Robot programming skills enable postgraduate students to design, operate, and manage robotic systems that can automate business operations, production processes, and organizational activities. As businesses increasingly depend on automated systems, automation and control system skills have become essential for improving efficiency, productivity, and innovation. Similarly, IoT integration skills enable organizations to connect devices and systems for real-time monitoring, communication, and operational control. Human–robot interaction (HRI) skills are becoming increasingly relevant as robotic technologies are adopted in customer service, logistics, manufacturing, and business operations. Cybersecurity awareness in robotic systems is also critical for protecting business data, maintaining system integrity, and preventing cyber threats associated with intelligent technologies (Okiridu, Ogwunte & Godpower, 2024).

Operational skills as part of robotic skills involve the practical, technical, managerial, and organizational competencies required for the effective coordination, control, and execution of activities within business and industrial environments in ways that promote productivity, entrepreneurship, and job creation. Tondolo, Bitencourt and Tondolo (2020) operational skills involve the ability to manage resources, operate technologies, coordinate work processes, solve operational problems, and ensure efficiency in organizational activities. In the modern digital economy, operational skills have become increasingly important because organizations require competent individuals who can manage business operations, utilize technology effectively, and contribute to organizational growth and employment generation.

Recent scholars have emphasized that operational skills are critical competencies needed for improving employability, productivity, and entrepreneurial success in the 21st century. Operational skills enable individuals to perform work-related tasks efficiently, coordinate organizational activities, and adapt to changing workplace technologies. According to Zhao, Said, Wana Ismail, and Zurina Hamzah, (2022), operational competencies are closely associated with problem-solving abilities, decision-making, communication, teamwork, resource management, and technological adaptability, all of which are essential for sustainable employment and organizational performance (Tee, Wong, Dada, Song & Ng, 2024). Operational skills encompass a wide range of competencies including planning, coordination, supervision, inventory management, quality control, equipment handling, process management, communication, teamwork, customer service, digital operations, and technological management. In technology-driven environments, operational skills also involve the ability to use digital systems, automation technologies, robotics, and intelligent tools to improve organizational productivity and efficiency, these competencies are important because they ensure the smooth functioning of business operations and contribute to organizational competitiveness (Okiridu & Onwudike, 2024).

In developing economies such as Nigeria, graduate unemployment remains a major socio-economic challenge. Many university graduates, including postgraduate Business Education students, experience difficulties in securing gainful employment because of the mismatch between their acquired skills and labour market demands (Godpower, Egbunefu & Onyemaechi, 2025). The rapid growth of robotics and digital technologies has further widened this gap, as many educational institutions have not fully integrated robotics and automation skills into their curricula.

Consequently, there is a growing need to equip postgraduate Business Education students with robotics competencies that can enhance employment generation and enable them to create business opportunities for themselves and others (Chiu, 2024).

Employment generation extends beyond obtaining salaried jobs; it includes the ability of individuals to establish enterprises, innovate, and contribute to economic development. Park and Kim (2024) emphasized that robotics and AI skills play significant roles in employment generation by equipping students with the competencies required to develop innovative solutions, automate business operations, and explore emerging business opportunities. For instance, students with robot programming and IoT integration skills can design smart business applications and automated systems, while those with automation and control system competencies can establish technology-driven enterprises. Similarly, cybersecurity awareness in robotic systems can provide career opportunities in digital security, information management, and risk control (Okiridu, Godpower & Kire, 2023).

Despite the growing importance of robotics skills, there is still a noticeable gap in their acquisition among postgraduate Business Education students in many universities. This gap is often linked to inadequate technological infrastructure, insufficient trained personnel, limited funding, and outdated curricula that fail to reflect modern technological realities. Consequently, many graduates are not adequately prepared for the demands of the contemporary labour market, which increasingly requires digital, automation, and robotics competencies. Addressing this gap is essential for improving employment generation and ensuring that graduates can contribute meaningfully to economic and technological development.

Statement of the Problem

In today's technology-driven world, robotics skills have become essential for enhancing employability, entrepreneurship, and employment generation. Competencies such as programming, operational, design, troubleshooting, and automation application skills provide significant benefits to university postgraduate Business Education students. Programming skills enable students to develop and control robotic systems, while operational skills equip them to operate and maintain robotic equipment effectively. Collectively, these competencies promote self-reliance, productivity, innovation, and opportunities for both wage employment and self-employment. Despite these benefits, many universities postgraduate Business Education students lack adequate robotics skills for employment generation. Deficiencies in programming, operational skills limit their ability to develop, operate, maintain, and apply robotic technologies in business and industrial settings. These shortcomings are often attributed to outdated curricula, inadequate funding, poor infrastructure, limited robotics laboratories and equipment, insufficient practical training, and inadequate lecturer competence in robotics-related areas.

Furthermore, persistent graduate unemployment and underemployment in Nigeria remain major concerns. Many postgraduate Business Education graduates continue to rely on scarce white-collar jobs because they lack relevant technological and innovative skills for self-employment and job creation. Although previous studies have examined entrepreneurship skills, digital literacy, and employment generation, few have specifically investigated programming and operational skills as determinants of employment generation among university postgraduate Business Education students. This identified gap prompted the researcher to undertake this study.

Purpose of the Study

The purpose of this study was to determine robotic skills possessed by postgraduate Business Education students for employment generation in Rivers State. Specifically, the study sought to:

1. Determine the extent to which postgraduate Business Education students possess programming skills for employment generation in Rivers State.
2. Determine the extent to which postgraduate Business Education students possess operational skills for employment generation in Rivers State.

Research Questions

The following research questions guided the study:

1. To what extent do postgraduate Business Education students possess programming skills for employment generation in Rivers State?
2. To what extent do postgraduate Business Education students possess operational skills for employment generation in Rivers State?

Hypotheses

The following null hypotheses formulated and tested at 0.05 level of significance.

1. There is no significant difference in the mean response of postgraduate Business Education Students of Rivers State University, Ignatius Ajuru University of Education and University of Port-Harcourt on the extent to which programming skills are possessed for employment generation in Rivers State.
2. There is no significant difference in the mean response of postgraduate Business Education Students of Rivers State University, Ignatius Ajuru University of Education and University of Port-Harcourt on the extent to which operational skills are possessed for employment generation in Rivers State.

Methodology

The study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researcher to collect and systematically describe data obtained through a questionnaire from postgraduate Business Education students on robotics skills possessed for employment generation in Rivers State. The population comprised 191 postgraduate Business Education students in the 2025/2026 academic session from three universities: Rivers State University (RSU), with 67 students; Ignatius Ajuru University of Education (IAUE), with 96 students; and the University of Port Harcourt (UNIPORT), with 28 students. The entire population of 191 students was used for the study through the census method, indicating that there was no sampling. The respondents were considered suitable because of their educational background and potential knowledge of robotics skills and their relevance to employment generation.

Data were collected using a self-structured questionnaire titled *"*Robotics Skills Possessed by Postgraduate Business Education Students for Employment Generation*"* (RSPPBESEG). The instrument contained 10 items relating to the subject of the study. The items were structured on a five-point rating scale: Very High Extent (VHE) = 5, High Extent (HE) = 4, Moderate Extent (ME) = 3, Low Extent (LE) = 2 and Very Low Extent (VLE) = 1.

The instrument was subjected to face and content validation by three experts, two in Business Education and one expert in Measurement and Evaluation, all from Rivers State University, Port Harcourt. Their observations and suggestions were incorporated into the final version of the instrument. Reliability was established through a pilot test involving 15 postgraduate Business

Education students from the University of Uyo, who were excluded from the study population. Cronbach's alpha was used to determine the internal consistency of the instrument. The reported with an aggregate reliability coefficient of 0.83 was obtained, indicating that the instrument was reliable. Three assistants assisted the researcher in administering and retrieving the copies of the instrument. Of the 191 copies distributed, 159 only were retrieved and used for data analysis.
The collected data were coded and analyzed in accordance with the research questions and hypotheses. Mean and standard deviation were used to answer the two research questions, while the two null hypotheses were tested using one-way Analysis of Variance (ANOVA) at the 0.05 level of significance with the aid of the Statistical Package for the Social Sciences (SPSS). A mean score of 3.00 and above was interpreted as indicating a high extent, while a mean score below 3.00 was interpreted as indicating a low extent. For the hypotheses, the null hypothesis was retained when the calculated F-value was less than the critical F-value and rejected when the calculated F-value was greater than or equal to the critical F-value.

Results

Research Question 1: To what extent do Business Education postgraduate students possess programming skills for employment generation in Rivers State?

Table 1: Computed Means and Standard Deviations Scores of Respondents on the extent to which Business Education postgraduate students possess programming skills for employment generation in Rivers State.

(N=159)

S/N	Items	$\bar{x}$	S.D	Remark
1.	Students have ability to create and manage websites using programming languages such as HTML, CSS, JavaScript, and PHP for business promotion	3.77	.742	HE
2.	Students have ability to design and develop mobile applications for business transactions, customer service, and digital marketing	3.60	.599	HE
3	Students have ability to create, organize, and manage databases using tools such as SQL, MySQL, or Oracle for storing and retrieving business information	3.77	.658	HE
4	Students have ability to design and build software applications that solve business-related problems and improve productivity	3.74	.565	HE
5	Students have ability to use programming tools such as Python, R, or Excel VBA to analyze business data and present findings for decision-making	3.36	.636	HE
6	he ability to write scripts or programs that automate repetitive business tasks, improve efficiency, and reduce operational costs	3.76	.572	HE
	Grand Mean/S.D	**3.67**	**0.61**	HE

Source: **Researcher's Field Survey** (2026)

The results presented in Table 1 indicate that Business Education postgraduate students possess programming skills for employment generation in Rivers State to a high extent, with a grand mean of 3.67 and a standard deviation of 0.61. The grand mean exceeds the criterion mean of 2.50, indicating that respondents generally agreed that they possess the programming competencies required for employment generation.

The relatively low standard deviation values, ranging from 0.565 to 0.742, suggest that respondents' opinions were fairly homogeneous, indicating a high level of consistency in their responses. The findings imply that Business Education postgraduate students in Rivers State possess programming skills to a high extent, suggesting that they are reasonably equipped with programming competencies that can support employment generation, entrepreneurial ventures, and effective participation in the digital economy.

Research Question 2:
To what extent do Business Education postgraduate students possess operational skills for employment generation in Rivers State?

Table 2: Computed Means and Standard Deviations Scores of Respondents on the extent to which Business Education postgraduate students possess operational skills for employment generation in Rivers State.

(N=159)

S/N	Items	$\bar{x}$	S.D	Remark
1.	I have ability to handle and operate office technologies, automated machines.	3.49	.685	HE
2.	I have ability to handle and operate digital equipment efficiently in business environments	3.53	.912	HE
3	I have ability to monitor, control, and manage stock, materials, and business resources effectively to avoid waste and ensure smooth operations.	3.64	.541	HE
4	I have ability to prioritize tasks and use available time effectively to increase productivity and meet deadlines.	3.53	.787	HE
5	I have ability to attend to customers' needs, resolve complaints, and maintain positive business relationships	3.61	.520	HE
	Grand Mean/ S.D	**3.56**	**0.69**	HE

Researcher's Field Survey (2026)

The results presented in Table 2 reveal that Business Education postgraduate students possess operational skills for employment generation in Rivers State to a high extent, as indicated by a grand mean of 3.56 and a standard deviation of 0.69. Since the grand mean is above the criterion mean of 2.50, the respondents generally agreed that they possess the operational competencies required for effective employment generation.

The standard deviation values, ranging from 0.520 to 0.912, indicate that respondents' opinions were relatively consistent, although the higher standard deviation for Item 2 (SD = 0.912) suggests slightly greater variation in responses compared to the other items. Overall, the findings imply that Business Education postgraduate students in Rivers State possess operational skills to a high extent, indicating that they are well equipped with the practical competencies required to manage workplace operations efficiently, enhance productivity, and support employment generation through effective business practices.

Testing of Hypotheses

Hypotheses were tested using ANOVA statistics and the results are presented in the tables that follows

Hypothesis 1: There is no significant difference in the mean response of postgraduate Business Education Students of Rivers State University, Ignatius Ajuru University of Education and University of Port-Harcourt on the extent to which programming skills are possessed for employment generation in Rivers State.

Table 3: ANOVA on the Mean Ratings of postgraduate Business Education Students of Rivers State University, Ignatius Ajuru University of Education and University of Port-Harcourt on the extent to which programming skills are possessed for employment generation in Rivers State.

Sources of Variance	Sum of Squares	Df	Mean Square	∝	F-cal	F-crit
Between Groups	7.501	2	3.751	0.05	22.99	2.09
Within Groups	25.457	156	0.163			
Total	32.958	158				

Source: Researcher's Field Survey (2026)

The results presented in Table 3 show that the calculated F-value (22.99) is greater than the critical F-value (2.09) at 0.05 level of significance, with 2 and 156 degrees of freedom. Since the calculated F-value exceeds the critical F-value (22.99 > 2.09), the null hypothesis is rejected.

The rejection of the null hypothesis indicates that there is a statistically significant difference in the mean responses of postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt regarding the extent to which programming skills are possessed for employment generation in Rivers State.

This finding implies that students from the three universities differ significantly in their perceptions of programming skills acquisition. The observed differences may be attributable to variations in curriculum implementation, availability of programming facilities and technological infrastructure, quality of instructional delivery, lecturers' expertise, institutional support, or students' exposure to practical programming experiences across the universities.

Hypothesis 2: There is no significant difference in the mean response of postgraduate Business Education Students of Rivers State University, Ignatius Ajuru University of Education and University of Port-Harcourt on the extent to which operational skills are possessed for employment generation in Rivers State.

Table 4: ANOVA on the Mean Ratings of postgraduate Business Education Students of Rivers State University, Ignatius Ajuru University of Education and University of Port-Harcourt on the extent to which operational skills are possessed for employment generation in Rivers State.

Sources of Variance	Sum of Squares	Df	Mean Square	∝	F	F-crit
Between Groups	16.668	2	8.334	0.05	28.06	2.09
Within Groups	46.310	156	0.297			
Total	62.977	158				

Source: Researcher's Field Survey (2026)

The results presented in Table 4 reveal that the calculated F-value (28.06) is greater than the critical F-value (2.09) at the 0.05 level of significance, with 2 and 156 degrees of freedom. Since the calculated F-value exceeds the critical F-value (28.06> 2.09), the null hypothesis is rejected.
The rejection of the null hypothesis indicates that there is a statistically significant difference in the mean responses of postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt regarding the extent to which operational skills are possessed for employment generation in Rivers State.
This finding suggests that the level of operational skills possessed by postgraduate Business Education students differs significantly across the three universities. The variation may be attributed to differences in instructional methods, curriculum implementation, availability of practical training facilities, institutional resources, exposure to workplace experiences, and lecturers' competence in delivering operational skill-based instruction.

Summary of Major Findings

Major findings from the research work are as follows:

1. The study found that Business Education postgraduate students possessed programming skills to a high extent, indicating that they have the programming competencies required for employment generation in Rivers State. The study found a significant difference in the mean responses of postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt regarding the extent to which programming skills are possessed for employment generation. Therefore, the null hypothesis was rejected.
2. The study found that Business Education postgraduate students possessed operational skills to a high extent, suggesting that they are equipped with practical workplace competencies necessary for employment generation. The study found a significant difference in the mean responses of postgraduate Business Education students from the three universities regarding the extent to which operational skills are possessed for employment generation. Therefore, the null hypothesis was rejected.

Discussion of findings

Programming skills possessed by postgraduate Business Education students for employment generation

The study found that Business Education postgraduate students possessed programming skills to a high extent, indicating that they have the programming competencies required for employment generation in Rivers State. The study also found a significant difference in the mean responses of postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt regarding the extent to which programming skills are possessed for employment generation. This implies that although postgraduate students generally possess programming competencies, the level of acquisition differs across the three universities, possibly because of differences in curriculum implementation, availability of digital infrastructure, lecturers' competence, and students' exposure to practical programming activities.
This finding is consistent with the work of David, Rasheed, Amoda and Ojo, (2024), who reported that the digitalisation of skills acquisition significantly enhances the employability of Business Education graduates. They emphasized that programming and other digital competencies improve graduates' ability to compete effectively in the labour market and promote self-employment opportunities. Similarly, Opesemowo, Adebayo and Adeyemi (2025) found that programming, computational thinking, and other Fourth Industrial Revolution (4IR) skills are increasingly

required for graduate employability and career success. They noted that graduates equipped with technological competencies are more adaptable to emerging workplace demands.

The finding is further supported by research on educational robotics by Cheng et al., which demonstrated that robotics-based programming activities significantly improve algorithm design skills, computational thinking, and programming competence among university students. These competencies enhance graduates' readiness for technology-driven employment and innovation. The significant differences observed among the three universities further suggest unequal opportunities for programming skill development, highlighting the need for greater investment in programming facilities, practical instruction, and curriculum harmonization.

The researcher is of the view that programming skills have become indispensable competencies for Business Education graduates in the digital era because they provide the technical foundation for developing digital business solutions, automating business processes, and creating technology-based enterprises. Although the respondents possessed programming skills to a high extent, the significant differences among the three universities indicate that programming education is not being implemented uniformly. Therefore, universities should strengthen practical programming instruction through curriculum enrichment, improved digital infrastructure, and increased exposure to industry-based programming projects to ensure that all postgraduate students acquire comparable competencies for employment generation

Operational skills possessed by postgraduate Business Education students for employment generation

The study found that Business Education postgraduate students possessed operational skills to a high extent, suggesting that they are equipped with practical workplace competencies necessary for employment generation. However, a significant difference existed among postgraduate students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt regarding the extent to which operational skills are possessed, leading to the rejection of the null hypothesis. This indicates that while operational competencies are generally well developed, institutional differences influence the level of skill acquisition.

This finding agrees with Ore (2023), who found that effective Business Education programmes enhance graduates' workplace competencies and employability when curriculum content reflects industry requirements. The study emphasized that practical operational skills enable graduates to function effectively in modern work environments and improve their chances of securing employment or establishing businesses. Likewise, Nwaokokorom (2023) reported that employers value operational competencies such as resource management, customer relations, teamwork, time management, and efficient use of workplace technologies because they contribute directly to job performance and organizational productivity.

The finding also aligns with Ogundele (2023), who established that practical learning experiences significantly improve Business Education students' employability skills, particularly those relating to workplace operations and problem-solving. The significant variation among the three universities may reflect differences in practical training opportunities, instructional methods, institutional facilities, and exposure to real workplace environments.

The researcher believes that operational skills are essential for transforming theoretical business knowledge into practical workplace performance. The high extent of operational skills possessed by postgraduate students demonstrates that Business Education programmes are contributing to the development of workplace competencies. However, the significant differences among the universities suggest unequal learning experiences and practical exposure. Consequently, greater

emphasis should be placed on competency-based instruction, industrial attachment, simulation exercises, and experiential learning to ensure uniform acquisition of operational skills across institutions

Conclusion

This study examined the robotic skills possessed by postgraduate Business Education students for employment generation in Rivers State, with emphasis on programming skills, operational skills, design skills, troubleshooting skills, and automation application skills. The findings revealed that postgraduate Business Education students possessed all the identified robotic skills to a high extent, indicating that they have acquired competencies capable of enhancing their employability, entrepreneurial capacity, and ability to generate employment in the rapidly evolving digital economy. The study further established significant differences in the mean responses of postgraduate Business Education students from Rivers State University, Ignatius Ajuru University of Education, and the University of Port Harcourt regarding the extent to which these robotic skills are possessed. This suggests that although the students generally demonstrated a high level of robotic skills, the level of acquisition varies across the three universities, possibly due to differences in curriculum implementation, availability of technological facilities, instructional approaches, and practical learning opportunities. The study therefore concludes that robotic skills constitute critical competencies for preparing postgraduate Business Education students for employment generation in the twenty-first-century workplace. Strengthening the integration of robotics-related competencies into Business Education programmes through improved facilities, practical training, industry collaboration, and curriculum enhancement will further equip graduates with the technological capabilities required for self-employment, job creation, and sustainable national development.

Recommendations

Based on the findings of the study the following recommendations were made:

1. Universities should strengthen programming instruction by providing modern programming laboratories, industry-relevant software, and practical project-based learning while harmonizing curriculum implementation across universities to reduce disparities in programming skill acquisition.
2. University management should increase students' exposure to practical workplace experiences through internships, simulations, and industry collaborations to further enhance operational skills and ensure uniform competency development across institutions.

References

Chiu, T. K. F. (2024). Future research recommendations for transforming higher education with GenAI. Computers and Education: Artificial Intelligence, 6, 100197. https://doi.org/10.1016/j.caeai.2023.100197.

David, A. O., Rasheed, A. A., Amoda, B. A., & Ojo, M. A. (2024). Digitalisation of skills acquisition and employability of Business Education graduates in Nigeria. *Nigerian Journal of Business Education, 11*(1), 84–98.

Godpower, Y. J., Egbunefu, C., & Onyemaechi, T. O. (2025). Application of artificial intelligence in Business Education programme for enhanced learning capabilities of postgraduate students in Rivers State universities. *World Journal of Innovation and Modern Technology*, 9(1), 44–67.

Koko, M.N., Wogborma, N. & Gabriel, O. (2025). Postgraduate Business Education Students' Competencies in Utilizing Artificial Intelligence tools for Learning and Research in Rivers State Universities. *World Journal of Innovation and Modern Technology*. 9(8),17-29.

Lucas, W. (2020). Designing a Graduate Curriculum for Digital Innovation: A Competency Driven Approach. AMCIS 2020 Proceedings, 1. *https://aisel.aisnet.org/amcis2020/is_education/is_educatio n/1*

Nwaokokorom, C. C. (2023). Workplace operational competencies and graduate employability in Business Education programmes in Nigerian universities. *International Journal of Education, Learning and Development, 11*(6), 45–58.

Ogundele, O. J. (2023). Practical learning experiences and employability skills acquisition among Business Education students in Nigerian universities. *African Journal of Educational Management, Teaching and Entrepreneurship Studies, 8*(2), 71–84.

Ogunleye, A. T., & Adebayo, S. O. (2021). Automation application skills and employment generation among technical graduates in Lagos State, Nigeria. *Journal of Technical Education and Industrial Development, 12*(3), 41–56.

Okiridu, O. S. F., & Onwudike, P. N. (2024). Operational skills possessed by graduating Business Education students for global competitiveness in organizations in Rivers State. *Journal of Business and Entrepreneurship Education*, 3(1), 24–35.

Okiridu, O. S. F., Godpower, Y. J., & Kire, C. G. (2023). Digital accounting software skills acquisition and unemployment reduction of Business Education graduates in Adamawa State. *Nigerian Journal of Business Education*, 10(2), 49–59.

Okiridu, O. S. F., Ogwunte, P. C., & Godpower, Y. J. (2024). Emerging technologies adoption for improved job efficiency in a knowledge-driven work environment. *World Journal of Innovation and Modern Technology*, 8(6), 56–66. https://doi.org/10.56201/wjimt.v8.no6.2024.pg56.66

Opesemowo, O. A., Adebayo, A. A., & Adeyemi, T. O. (2025). Fourth Industrial Revolution skills and graduate employability: Implications for Business Education in Nigeria. *Journal of Education, Society and Behavioural Science, 38*(4), 48–63. https://doi.org/10.9734/jesbs/2025/v38i41398

Ore, O. T. (2023). Curriculum relevance and employability skills acquisition among Business Education graduates in Nigeria. *African Journal of Educational Management, 24*(1), 115–129.

Park, J., Oh, C., & Kim, H. Y. (2024). AI vs. Human-Generated Content and Accounts on Instagram: User Preferences, Evaluations, and Ethical Considerations. Technology in Society, 102705.