

TRAINING USING ARTIFICIAL INTELLIGENCE (AI) AND UPSKILLING OF BUSINESS EDUCATION FRESH GRADUATES FOR THE WORLD OF WORK

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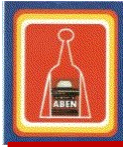
Abstract

This study determined the up-skilling level of pre-training skills and post-training skills possessed by fresh graduates of business education for the future of jobs using AI tools. The study answered one research question -What is the up-skilling level of pre- and post-training skills possessed by fresh graduates of business education for the future of jobs using AI tools? The study also tested one null hypothesis, "There is no significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools". The ex post facto designs were adopted. This study was undertaken in Nigeria, and delimited to Cross River State, using graduates from the two public universities, the University of Cross River State (UNICROS), and the University of Calabar, Calabar (UNICAL). The population of the study was 205 fresh graduates, and 120 respondents were selected using an accessible sampling technique. Pre- and post-training competency (skills) analysis generated data analysed using item-by-item analysis graded in percentages for answers to research questions and Simple Linear Regression for the test of the null hypothesis. Findings reveal a high up-skilling level of pre-and post-training skills possessed by fresh graduates of business education for the world of work for the answer to the only research question; and significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools. Based on the findings made, it is concluded that training will continue to be meaningful and address the skill needs of fresh graduates with the potency to reposition them for the present and future of jobs. Again, the delivery of business education holds bright prospects for graduates with the use of AI and other modern tools. Based on the conclusion drawn, it is recommended that stakeholders in business education, especially lecturers, government training agencies, and industries should expose undergraduates to training with the use of AI tools. This would, therefore, prepare fresh graduates for the future of work with, or without training after graduation. This is necessary because not all organisations may engage graduates with the hope of training before the commencement of job schedules.

Keywords: Business education, fresh graduates, artificial intelligence, training, skills, future jobs

Introduction

Most recently, the global environment has witnessed yet another technological breakthrough as the search for better and more accurate approach to productive outcomes in virtually all facets of human endeavours continues. This most recent technological breakthrough



is Artificial Intelligence (AI). Notably, universities globally are gradually introducing AI in the area of teaching/learning, research, and other activities for the development of skills to remain globally relevant. Significantly, AI is timely emerging amidst the worries of future jobs. Future jobs here describe technologically-based, software-driven, block-chained, creativity-bound, ethically-coded hacking/cyber security-directed, big data-controlled and virtual reality-based and human skilled-guided jobs. This is happening when certain skills seem to be facing extinction with automation of the work environment. A report by UNESCO/UNEVOC (2021) noted that the era of artificial intelligence is young in years but advanced in impact with intermediate skill jobs fast disappearing as their tasks are automatically automated and individuals are increasingly likely to encounter AI technology in their everyday lives. UNESCO/UNEVOC further reported that 50 per cent of organisation worldwide report using some forms of AI in their operations.

Fresh graduates need up-skilling to adequately prepare and show readiness to face life outside the classroom. Ferreira, Coetzee and Potgieter (2024) in a study reported that it is crucial for individuals to cultivate a deep understanding of the constantly changing nature of the job market. With jobs and career paths becoming increasingly indistinct and unpredictable, developing awareness of the digital work world is more important than ever. The study by Ferreira *et al* empirically investigated the degree to which the world of work readiness and competency of distance learning students could serve as predictors for their digital work world awareness using 486 full-time employed undergraduate students at a comprehensive South African distance learning institution. Data was analysed using regression analysis and structural equation modelling was used in the cross-sectional, quantitative study. The study emphasised the significance of developing job certitude, business ingenuity and socio-digital agility as part of students' career development learning to improve their awareness of the digital work environment. The study enhanced comprehension of the implicit function of students' work readiness and competency in relation to significant digital-era awareness.

The description of future jobs may not be conclusively discussed without the potentials inherent in AI and other highly automated machines. Donald *et al* (2024) in a study focusing on framework of sustainable career and career ecosystem acknowledged the relationship between AI and the future of labour market. Here, Donald *et al* described career ecosystem as a complexity of players comprising individuals, enterprises and other establishment within the private and public sectors, among others with interrelationship as determinants of employment, growing along career paths. Donald *et al* established a link between career ecosystem and sustainable career development, noting that the later aims to infuse career theory for a seamless movement along career matrix. Meanwhile, the reality with uncertainty of the future jobs can be addressed by modelling future of education, especially higher education that trains for career transitions. Wadhwa *et al* (2024) observed the emergence of virtual mobility as an emerging instrument that supports internationalisation of higher education using information obtained from 398 teachers from 73 Russian universities under internship programmes numbering 15 during COVID-19 pandemic in the year 2020. Findings were that participation in the internship was driven by external factors, and some internal justification relating to pedagogical strategies. The implied relationship with the current study is that the future of jobs can be made within the reach of graduates by exposing them to emerging tools that will be relevant in the future in the performance of tasks.

Exposure of potential graduates in the classroom and other avenues such as practical experience outside the classroom through the use of these emerging tools as well as sound pedagogical methods can be useful. Another way of preparing graduates for the future job is in enhancing information competence of the teacher through the application of modern technology

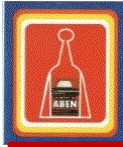


(Abdualiyeva&Seitova). Laine and Lee (2024) in a study on how suitable collaborative virtual reality (CVR) has been applied in higher education using nine CVR cases involving 41 undergraduates with average age of 24. Findings indicated challenges, affordances and ideas for CVR usage. The findings here imply that new and workable approaches should be adopted in the teaching and learning at the higher education level.

Other concerns that can shape the future of jobs in the labour market include globalisation, external, and internal labour market-related factors. D'Amours et al (2024) explained how globalisation has brought about inter-relationships among organisations with analysis of the mechanisms that promote such inter-relationships and further highlighted significantly-related theoretical approaches to inter-firm relationships as Global Value Chains (GVC) and Global Production Networks (GPN). Bertron et al (2024) called for the analysis of workers' experiences and professional trajectories. MacKenzie et al (2023) reported the case of steel firms in UK experiencing restructuring that has led to frequent redeployment of workers as analogous to churning in and out of jobs on the external labour markets as against redeployment in the internal labour markets. In view of addressing uncertainties in the future of jobs, nations are reviewing policies and undertaking reforms of their labour markets, employment, job creations, among others in line with emerging global demands. Alvarez et al (2023) reforms in Southern European labour markets in the neoliberal direction with Spain and Portugal. The study concluded that institutional trajectories resulting from the labour market reforms can bring about profound change with significant resilience.

The uncertainty that characterize the future of jobs can equally be attributable to mixed stance in gender roles, misleading information in social media, among others. Another area of uncertainty in jobs of the future is the conflicts of role demarcation in gender. Heilman et al (2024) in a study reported gender-based discrimination as continually hindering women's career progress. It is therefore necessary to think of future jobs without gender-bias whatsoever. Beyond this, the outburst of social media and the misleading information by activities such as spyware, job scamming are on the increase, thus threatening the future of jobs. Pareek and Goncalves (2024) observed the manner in which social media is used to misinform people on job offer and found that peers' awareness has a high potency than trustworthiness in utilising such platforms for job search. A study by Rieth, Onnasch and Hagemann (2024) focused on the effect of adaptive automation in delegating tasks and its effect on human perception in terms of perceived autonomy and competence, satisfaction, and human role. The online study using the same dual-task paradigm made use of a novice sample of 93 and another sample of 126 participants supported by static information automation, static decision automation, or an adaptable solution that availed them of switching between the two automation stages. Findings revealed that adaptive automation could increase even when humans rarely switch.

In today's evolving job and business landscape, there is growing concern over the apparent skill gap between what graduates possess and what the labour market demands, particularly in the context of business education. The inability of fresh graduates, including those from business education programmes, to effectively meet workplace and entrepreneurial expectations is increasingly attributed to the absence of relevant, contemporary skills. This mismatch is especially evident when graduates seek employment or attempt to operate within the highly dynamic and globalised business environment of the 21st century. Despite completing academic programmes, many of these graduates still require additional training to function competently in their fields. The widening gap between graduate skills and labour market demands in business education calls for innovative solutions. Integrating AI-driven learning, as explored by Okon, Ewuru, and Undie (2024), offers a strategic pathway to bridge this gap by enhancing



learners' practical competencies through adaptive, technology-enabled instruction. Bridging the skill gap in business education requires a dual approach that combines AI-enhanced learning for competency development with institution-industry resourcefulness, where industry experts actively contribute to curriculum innovation, digital exposure, and real-world training (Okon & Ewuru, 2024)

This persistent gap highlights institutional shortcomings, as universities and colleges are partly blamed for failing to align their curricula and training methods with the realities of the modern world of work. Of particular concern is the limited exposure of undergraduates to digital tools and technologies that are integral to current and future job functions. As a result, business education graduates often enter the job market with inadequate technological proficiency, making them vulnerable to being screened out during recruitment or unable to retain employment in technology-driven environments.

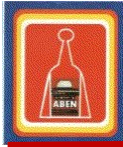
This issue is even more troubling when considered against the backdrop of Nigeria's rising unemployment rate and the projected dominance of artificial intelligence and other digital technologies in future jobs. The fear that a large segment of the workforce may become redundant due to their inability to adapt to such changes underscores the urgency for up-skilling. The critical questions that arise, therefore, include whether the skills acquired by fresh graduates are in any way sufficient for the demands of today's and tomorrow's workplaces, and whether targeted training can significantly bridge this skill gap.

In response to these concerns, this study examined the up-skilling levels of fresh graduates of business education through the use of AI tools. It specifically addressed the research question: *What is the up-skilling level of pre- and post-training skills possessed by fresh graduates of business education for the future of jobs using AI tools?* The study also tested the null hypothesis: *There is no significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools.* By doing so, the study sought to provide empirical evidence on whether focused training using modern technological tools can enhance graduates' readiness for future employment and entrepreneurship. Therefore, the study determine the up-skilling level of pre-training skills and post-training skills possessed by fresh graduates of business education for the future of jobs using AI tools; answers the research question, What is the up-skilling level of pre- and post-training skills possessed by fresh graduates of business education for the future of jobs using AI tools? The study also tested the null hypothesis - There is no significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools

Research Methods

This study adopted the ex post facto designs, which availed the researcher the opportunity of adopting the pre and post-skills training. This study was undertaken in Cross River State, using graduates from the two public universities, namely: University of Cross River State (UNICROS), and University of Calabar, Calabar (UNICAL). Population was 205 fresh graduates. Accessible sampling technique was used to obtain a sample size of 120 respondents who are fresh graduates of business education, spanning through 2023 and 2024. Accessible sampling technique, also known as convenience sampling (commonly accepted term in research methodology) was adopted for the study since the researchers had to select participants who were easily available, and reachable to the researcher.

Accessible sampling technique is a non-probability sampling method in which respondents are selected based on their availability and willingness to participate in the study. It involves choosing individuals who are easily reachable at the time of data collection, without



using a sampling frame or randomisation process. In this study, the technique was applied by selecting university-based bank customers who were present and accessible in the banking halls of UNICAL Microfinance Bank and UNICROSS Microfinance Bank during the period of questionnaire administration. The technique was used after the population and area of study were defined and before the research instrument was administered. It was considered appropriate because it allowed the researcher to reach participants within a limited timeframe and ensured efficient data collection despite not being able to access the entire population.

This technique became necessary due to the nature of the population, which was undefined in terms of a fixed list or register of all customers. Since no comprehensive record of the total population of university-based bank customers was publicly available, and access to customer data was restricted, it was not possible to apply random or probability sampling methods. Accessible sampling thus provided a practical means of collecting data from a relevant portion of the population who could be reached in real-time and were willing to participate.

Pre-Training Skills competent Levels (Pre-TSCL) was administered to determine the skill competence of business education fresh graduates and another, Post-Training Skill Competent Level (Post-TSCL) after facilitating training, where these fresh graduates were guided to use AI tools in upgrading their understanding and skills in different aspects of business education. Data generated was analysed using percentage-graded item-by-item analysis for answer to research question and Simple Linear Regression for test of null hypothesis. The decision rule for answering the research question was based on the interpretation of percentage scores obtained from respondents on both the pre-training and post-training skill assessments. A higher average percentage score in the post-training phase compared to the pre-training phase indicates a higher level of up-skilling. Therefore, if the post-training average percentage is substantially higher than the pre-training average percentage, it is interpreted that the training had a positive effect on skill development, and the up-skilling level is considered high.

The decision rule for testing the null hypothesis using simple linear regression was based on the comparison of the calculated F-ratio with the critical F-ratio at the 0.05 level of significance and by observing the associated p-value. If the calculated F-ratio is greater than the critical F-ratio, or if the p-value is less than 0.05, the null hypothesis is rejected, indicating that there is a statistically significant influence of the independent variable on the dependent variable. Conversely, if the calculated F-ratio is less than the critical F-ratio or the p-value is greater than 0.05, the null hypothesis is not rejected, indicating no statistically significant influence.

Results

What is the up-skilling level of pre- and post-training skills possessed by fresh graduates of business education for the future of jobs using AI tools?

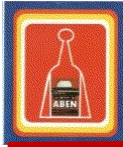
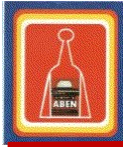


Table 1

Pre-training skills competency levels (Pre-TSCL) and post-training skill competency level (Post-TSCL) and up-skilling

		Pre-TSCL (%)	Post-TSCL (%)	Up-skilling Level (High/Low)
1	Business initiative skills	21.4	56.4	High
2	Business proposal development skills	22.2	56.9	High
3	Business plan development skills	26.3	58.1	High
4	Fund sources skills	19.3	58.8	High
5	Profit analysis skills	22.0	61.1	High
6	Information sourcing skills	26.8	60.7	High
7	Digital development skills	26.9	56.8	High
8	Sale force development skills	26.8	58.1	High
9	Digital marketing skills	25.6	57.9	High
10	Online payment skills	25.2	68.6	High
11	Digital information exchange skills	23.6	66.2	High
12	Online business registration skills	25.0	63.5	High
13	Online management meeting schedule skills	24.9	71.1	High
14	Board meetings' minutes taking skills	28.2	62.1	High
15	Software accounting development skills	25.6	60.7	High
16	Costing skills	33.6	64.4	High
17	Stock valuation skills	32.0	63.4	High
18	Cross-border business development skills	28.2	64.7	High
19	Cross-border job sourcing skills	26.9	62.3	High
20	Reporting skills	22.3	63.5	High
21	Product research skills	23.7	67.1	High
22	Product development skills	21.9	66.4	High
23	Forensic analysis skills	23.1	66.4	High
24	Entrepreneurial skills share	24.6	67.5	High
25	Business branding skills	24.6	65.7	High
26	Training providence skills	22.3	63.6	High
27	Multicultural adaptation skills	22.9	72.3	High
28	Online job search skills	25.8	70.5	High
29	Negotiation skills	24.2	64.7	High
30	Pressure absorbent skills	23.9	65.9	High
		25.0	63.5	High

Answer to this research question was based on a 30-item pre- and post-skills graded at percentage levels and administered to 120 respondents. Analysis of responses in percentage showed that the pre-training skills had the highest percentage (score) of 33.6 per cent and a minimum of 19.3 per cent with an average score of 25 per cent. However, after training, the post-training skills yielded a high level of skill in all 30 items drawn. The grading had a maximum score of 56.4 per cent and a maximum of 72.3% with an average of 63.5%. Summary of the result is presented in Table 1. These results show high up-skilling level of pre- and post-training skills possessed by fresh graduates of business education for the future of jobs.



There is no significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools

Table 2

Result of simple linear regression analysis of no significant influence of pre- and post-training skills offresh graduates of business education on up-skilling for the future of jobs using AI tools

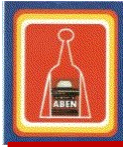
Variable	β	SERR	t	Sig. at .05	
Up-skilling	.978	86.80831	.989	97872.882	
Model Sum of Squaresdf Mean SquareF Significant Level					
Regression	40027680.300	1	40027680.300	5311.753	.05
Residual	889210.500	118	7535.682		
Total	40916890.800	119			

Results obtained and presented in Table 2 reveals that the calculated F-ratio of 5311.753 is greater than the critical F-ratio of 3.02 at .05 levels of significance with degrees of freedom being 1, and 119. Based on this revelation, the null hypothesis that there is no significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools is rejected. This further implies there is significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools. Again, the co-efficient of determination of .978 indicates that training of fresh graduates of business education contribute 97.8% to up-skilling of fresh graduates for the future of jobs using AI tools. The significance of t (72.882) indicates that pre- and post-training skills significantly contribute to the regression.

Summary of findings

The findings from the study revealed that the up-skilling level of pre- and post-training skills possessed by fresh graduates of Business Education for the future of jobs using AI tools was considerably high. Analysis of data from 120 respondents across 30 skill items showed that the pre-training skills were generally low, with percentages ranging from 19.3 percent to 33.6 percent and an average of 25.0 percent. However, following the training intervention, the post-training skills increased substantially across all skill areas, with scores ranging from 56.4 percent to 72.3 percent and an average of 63.5 percent. This demonstrates that the training had a significant effect on enhancing the graduates' competencies in AI-related and digital business skills, thereby resulting in a high level of up-skilling.

Further findings based on the test of the null hypothesis indicated that there is a statistically significant influence of pre- and post-training skills on the up-skilling of Business Education graduates for the future of jobs using AI tools. The result of the simple linear regression analysis revealed a calculated F-ratio of 5311.753, which far exceeded the critical F-ratio value of 3.02 at the 0.05 level of significance, with degrees of freedom being 1 and 119. Consequently, the null hypothesis was rejected. The coefficient of determination, R-squared, was 0.978, suggesting that 97.8 percent of the variance in up-skilling could be attributed to the pre- and post-training skills. Additionally, the t-value of 72.882 confirmed the statistical contribution of the independent variable to the regression model. These findings underscore the effectiveness of targeted training in significantly enhancing the skill sets of fresh graduates, thereby positioning them to meet the demands of future jobs in AI-driven environments.



Discussion

Findings arising from data analysis reveal high up-skilling level of pre- and post-training skills possessed by fresh graduates of business education for the future of jobs for answer to the only research question; and significant influence of pre- and post-training skills possessed by fresh graduates of business education on up-skilling for the future of jobs using AI tools. This result is surprising owing to the fact areas of training were not different from the provisions of the curriculum for business education undergraduates. Again, the reality of the 21st Century job demands place much mandate on universities to train graduates for the future of jobs. The deployment of AI tools in providing training to fresh graduates is not a surprise owing to the power of AI tools in the search for knowledge and skills. The findings of this study further strengthen earlier findings on the potency of training, more so, with the use of AI tools. A study by Donald et al (2024) had earlier established a relationship between AI and the future of labour market. Again, Wadhwa et al (2024) reported the emergence of virtual mobility in higher education in internship for career preparation and readiness. Studies earlier reviewed were not directly focussing on business education fresh graduates, it hoped that this study addresses such gap and adds to existing body of knowledge, hence the conclusion and recommendations further deciphered.

Conclusion

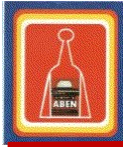
Based on the findings made, it is concluded that training will continue to be meaningful and addressing the skill needs of fresh graduates with the potency to reposition them for the present and future of jobs. Again, the delivery of business education holds bright prospects for graduates with the use of AI and other modern tools.

Recommendation

Based on the conclusion drawn, it is recommended that stakeholders in business education, especially lecturers, government training agencies and industries should expose undergraduates to training with the use of AI tools. This would therefore, prepare fresh graduates for the future of work with, or without training after graduation. This is necessary because, not all organisations may engage graduates with the hope of training them before commencement of job schedules.

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