NAU Journal of Technology and Vocational Education Volume 11, No. 1, April 2026 – Conference Special Edition

ARTIFICIAL INTELLIGENCE-DRIVEN FINANCIAL LITERACY AND IMPROVED START-UP CAPITAL GENERATION AMONG BUSINESS EDUCATION GRADUATES IN UNIVERSITIES IN RIVERS STATE

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Abstract
The study determines how artificial intelligence driven financial literacy education relates to improved start-up capital generation among Business Education graduates in universities in Rivers State. Learning is a complex and dynamic process that determines all the activities in the globe today. Two research questions were raised and two hypotheses were formulated. The study employed a correlational research design, with a population of 132 Business Education graduates in universities in Rivers State. This study adopted a census approach, hence there was no sample nor sampling techniques. The researcher's structured questionnaire titled 'Artificial Intelligence Driven Financial Literacy Education (AIDFLE) Questionnaire and Improved Start-up Capital Generation (ISUCG) Questionnaire The research instruments were reviewed and validated by three experts Out of the 132 copies of the instrument distributed 129 were properly filled, retrieved and used for analysis of the study. The research questions and hypotheses were analyzed with the use of Regression statistical tool to ascertain the relationship between the variables. Based on the finding, the study revealed that the two research questions show a correlation coefficient of .189 and .207 on how AI-driven financial literacy relates to improves start-up capital generation. This means that there is a high positive relationship between AI-driven financial literacy and start-up capital generation in Universities in Rivers State. Hypothesis 1 and 2 were not retained because the 'F' calculated values had associated probability value is lesser than 0.05 level of significance, meaning that AI driven financial literacy education of crowdfunding and angel investors has a positive significant relationship with start-up capital generation. It was recommended among others that administrators should organise training and workshops on AI-driven crowdfunding investment decision tools as well as encourage AI Research in financial literacy, with involvement of angel investors in full participation in start-up capital.

Keywords: Artificial Intelligence, Financial literacy, Angel investors, crowdfunding, start-up capital

Introduction

The contemporary business environment is witnessing a dynamic transformation influenced by rapid technological innovations, particularly Artificial Intelligence (AI). AI applications have transcended traditional business operations, penetrating educational systems and entrepreneurial practices to foster financial intelligence, decision-making, and business start-up success (Nguyen & Watanabe, 2023). The twin forces of rapid technological change and persistent graduate unemployment and under-employment have put enormous pressure on higher education systems worldwide, especially in Rivers State to produce graduates capable of creating their own economic opportunities. Business Education programmes have long included entrepreneurship and financial literacy as curriculum components intended to equip graduates with the knowledge and skills to start and manage enterprises. Financial literacy, which entails understanding and effectively using financial skills such as budgeting, investing, and credit management, has emerged as a critical determinant of entrepreneurial success (Lusardi & Mitchell, 2019). Among Business Education graduates, financial literacy constitutes the foundation for effective resource management and the acquisition of start-up capital necessary for self-employment and enterprise creation. Financial literacy broadly seen as the set of skills and knowledge that enable individuals to make informed and effective financial decisions is widely recognized as a critical enabler of entrepreneurship and small business success. However, traditional classroom approaches to financial literacy often rely on one-size-fits-all instruction, passive lectures, or static curricular materials that fail to adapt to learners'

prior knowledge, learning pace, and contextual needs. Meanwhile, start-up capital remains a structural constraint for graduates intending to launch businesses; studies in many low- and middle-income contexts (including Nigeria) highlight access to finance and inadequate financial management skills as recurring barriers to start-up formation and survival. Concurrently, AI technologies have matured rapidly and are increasingly embedded in educational technologies (edtech) and financial services. Artificial intelligence offers innovative solutions to these challenges by facilitating personalized financial learning, predictive analytics, and access to non-traditional funding sources such as crowdfunding platforms and angel investors (Okonkwo & Nwosu, 2024).

Artificial Intelligence (AI)-driven financial literacy education plays a transformative role in equipping Business Education graduates with the skills and digital competence necessary to access start-up capital through crowdfunding platforms. Crowdfunding is the practice of raising small amounts of capital from a large number of individuals via online platforms which requires a combination of financial knowledge, digital skills, persuasive communication, and data-driven marketing strategies to succeed (Mollick, 2019). However, many young entrepreneurs, including Business Education graduates, often lack the financial and digital literacy needed to effectively plan, launch, and manage crowdfunding campaigns (Abubakar & Yusuf, 2022). AI-driven financial literacy education addresses these gaps by using intelligent systems, adaptive learning algorithms, and data analytics to teach students how to make informed financial and entrepreneurial decisions. AI tools such as virtual financial tutors, predictive analytics systems, and chatbots personalize the learning process, helping graduates understand key aspects of crowdfunding, including budgeting, investor relations, and risk assessment (Friedman, Wallace, & Alami, 2021). Through simulation-based learning, AI-driven platforms expose learners to real-world crowdfunding scenarios where they can practice designing campaigns, setting funding goals, and managing online investors.

Furthermore, AI enhances the ability of Business Education graduates to analyze market trends and target the right audience for their crowdfunding campaigns. Using machine learning algorithms, AI systems can predict which types of projects attract the most backers, recommend optimal pricing strategies, and suggest marketing messages that resonate with potential funders (Chandra & Leenders, 2022). This data-driven insight empowers graduates to design more appealing campaigns and increases their chances of raising sufficient start-up capital. AI-enabled financial literacy programs also train learners to evaluate different crowdfunding models—such as reward-based, equity-based, and peer-to-peer lending and choose the most suitable option for their business ideas (Nguyen & Watanabe, 2023). By understanding these financial mechanisms, graduates can confidently engage with investors, present transparent financial plans, and manage post-campaign finances effectively. Moreover, AI systems support graduates in developing trust and credibility, which are critical success factors in crowdfunding. Through automated analytics and sentiment monitoring, AI tools help identify potential investor concerns and suggest strategies to improve campaign communication and transparency (Okonkwo & Nwosu, 2024). Consequently, AI-driven financial literacy education not only improves graduates' financial decision-making but also enhances their digital presence and funding success rates. AI-driven financial literacy education enhances Business Education graduates' access to start-up capital through crowdfunding by providing personalized and interactive learning on financial and crowdfunding concepts, enabling data-driven decision-making through AI-powered predictive analytics and campaign simulations. It also improves campaign management and investor communication via automated tools and insights and builds confidence and digital competence needed to navigate online funding ecosystems.

Through these mechanisms, AI transforms traditional financial education into a dynamic, practice-oriented system that empowers Business Education graduates to secure start-up capital successfully in the digital economy. Furthermore, AI-powered crowdfunding and investor-matching systems enhance entrepreneurs' access to start-up capital by connecting them with suitable angel investors and funding communities based on data analytics and behavioural profiling (Chandra & Leenders, 2022). For Business Education graduates, integrating AI in financial literacy education can therefore bridge the knowledge capital gap and foster improved access to finance for entrepreneurial ventures. However, AI-driven financial literacy directly impacts Business Education graduates' ability to secure start-up capital, especially through innovative financing channels like crowdfunding and angel investment.

Artificial Intelligence (AI)–driven financial literacy education is revolutionizing the way Business Education graduates learn to navigate the financial landscape and access start-up capital from angel investors. Angel investors individuals who provide capital for start-up businesses in exchange for ownership equity or convertible debt play a crucial role in early-stage business financing (Wetzel, 2020). However, attracting angel investment requires more than just a business idea; it demands sound financial knowledge, data-driven planning, and effective communication of business value. These competencies are often limited among graduates who have only received traditional financial education (Adeleke & Ogundele, 2022).

AI-driven financial literacy education bridges this gap by integrating intelligent learning systems that teach students how to analyze investment opportunities, develop financial projections, and present credible business plans that appeal to angel investors (Nguyen & Watanabe, 2023). AI-powered learning platforms provide personalized instruction, adapting to each learner's strengths and weaknesses in areas such as investment analysis, cash flow forecasting, valuation, and investor relations. This personalized learning experience helps Business Education graduates master complex financial concepts that are essential for engaging with investors effectively (Friedman, Wallace, & Alami, 2021). Moreover, AI applications such as predictive analytics, virtual mentorship systems, and financial simulators allow graduates to simulate investor negotiations and evaluate various funding scenarios. For example, predictive algorithms can forecast return on investment (ROI), helping graduates to present evidence-based business forecasts that increase investor confidence (Chandra & Leenders, 2022). Similarly, AI-driven mentorship systems connect learners to virtual models of investor behaviour, allowing them to learn negotiation strategies and understand the criteria angel investors use to assess start-ups.

Another significant way AI enhances access to start-up capital from angel investors is by improving graduates' data literacy and financial communication skills. AI-based tools teach graduates to analyze financial data and present it visually through dashboards, charts, and performance metrics that appeal to investors' analytical expectations (Okonkwo & Nwosu, 2024). By learning to communicate financial information transparently and convincingly, Business Education graduates increase their credibility and attractiveness to angel investors.

Additionally, AI facilitates intelligent networking and investor-matching systems, which connect entrepreneurs to suitable investors based on shared interests, risk tolerance, and industry alignment. Machine learning algorithms embedded in AI platforms can analyze start-up profiles and match them with angel investors likely to fund similar ventures (Chandra & Leenders, 2022). This targeted approach reduces the information asymmetry between entrepreneurs and investors and enhances the efficiency of the funding process. Finally, AI-driven financial literacy education promotes ethical and data-informed decision-making, which strengthens investor trust. Teaching accountability, transparency, and financial governance through intelligent monitoring systems, AI helps Business Education graduates demonstrate professionalism and reliability which is the key qualities that angel investors seek before committing funds (Nguyen & Watanabe, 2023). Through these mechanisms, AI transforms traditional financial education into a more practical, technologically enriched system that empowers Business Education graduates to secure early-stage financing from angel investors and establish sustainable entrepreneurial ventures. This underscores the need to investigate the nexus between AI-enabled financial literacy learning and improved business start-up capital among Business Education students.

Statement of the Problem

Financial literacy remains a significant challenge for many Business Education graduates aspiring to establish their own enterprises. Business Education programmes are designed to prepare students for entrepreneurial and managerial roles. The conventional methods of teaching financial concepts are often theoretical and lack technological adaptability (Ijeoma & Ofoegbu, 2023). Consequently, graduates face difficulties in making informed financial decisions, preparing financial plans, and accessing start-up funding. In the era of digital finance crowdfunding and angel investors platforms have emerged as viable alternatives to traditional bank loans for start-up financing. Yet, many Business Education graduates fail

to leverage these opportunities due to inadequate understanding of how these funding systems operate (Abubakar & Yusuf, 2022). Irrespective of the global demand on entrepreneurship education, some Business Education graduates find it difficult to apply their knowledge into viable start-ups due to inadequate access to capital and limited financial literacy. Artificial Intelligence presents transformative possibilities to address these challenges by providing interactive, adaptive, and data-driven financial learning tools that personalize knowledge acquisition and enhance decision-making. The problem, however, lies in the minimal integration of AI-driven financial literacy education in tertiary institutions and the lack of empirical data demonstrating its effect on improving access to start-up capital. If Business Education graduates continue to lack AI-enabled financial competence, they may remain excluded from modern funding opportunities such as crowdfunding and angel investment networks. This study therefore seeks to address this problem by examining how AI-driven financial literacy education can improve access to business start-up capital among Business Education graduates.

Purpose of the Study

The main purpose of this study is to determine how Artificial Intelligence–driven financial literacy education relates to improve of start-up capital generation of Business-Education-graduates. Specifically, the study sought to:

1. Determine how Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relates to generation of start-up capital.

2. Determine how Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relates to generation of start-up capital.

Research Questions

1. How does Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relate to generation of start-up capital.?

2. How does Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relate to generation of start-up capital.?

Research Hypotheses

The following null hypotheses guided the study:

1**:** There is no significant relationship between Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms and generation of start-up capital.

2: There is no significant relationship between Business Education graduate's AI-driven financial literacy education of angel investors mechanisms and generation of start-up capital.

Methodology

The study adopted a correlational research design, to determine the relationship between Business Education graduate's AI-driven financial literacy education and generation of start-up capital in Rivers State Universities. The study was conducted in Universities in Rivers State of Nigeria offering Business Education at Postgraduate level. Specifically, the institutions are River State University, Ignatius Ajuru University of Education and University of Port Harcourt. The justification for the choice of postgraduate students stems on the fact that they occupy a transitional stage between advanced academic training and active participation in entrepreneurial environment couple with the fact that they posses higher cognitive and analytical skills to interact with AI tools. The population of the study consist of 132 Business Education graduate. There was no sample nor sampling techniques because the entire population of 132 respondents were studied. This approach was deemed necessary to collect exhaustive data from all respondents, enabling the generalization of the study's findings. The instruments for data collection were tagged 'Artificial Intelligence driven Financial Literacy Education Questionnaire' (AIDFLEQ) and Improved Start-up Capital Generation Questionnaire (ISUCGQ). The response options were measured on a 4-point scale, ranging from Strongly Agree" (4 points), "Agree" (3 points), "Disagree" (2 points) and Strongly Disagree (1 point). The research instruments were reviewed and validated by three experts from the Faculty of Education. One specialist in Measurement and Evaluation and two experts in Business Education. The reliability of the instruments was established using the test-retest method. Ten

Business Education graduates from University of Uyo, that are not part of the population participated in ascertaining the reliability of the study. After using the SPSS statistical package, the coefficient index of 0.88 was obtained. Based on this reliability index, the instrument was deemed suitable for the conduct of the study. A total of 132 copies of the research instruments were administered by the researcher with the help of three (3) assistants. Out of the 132 copies of the instruments distributed 129 that was properly filled, were retrieved and used for analysis of the study. The data collected were processed with the use of Statistical Package for Social Science (SPSS). The data were organized and analyzed around research questions and hypotheses formulated to guide the study. The research questions were answered using Regression Analysis to determine the level of variation. The hypotheses were also analyzed with the use of Regression statistical tool to ascertain the relationship between the variables. Decisions were based on the calculated 'F' value. If the 'F' value is lesser than the table at 0.05 level of significance, retain if otherwise not retain.

Results

Research Question 1: How does Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relate to generation of start-up capital?

Table 1: *How Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relates to generation of start-up capital.*

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.189[a]	.036	.033	.17329	.036	14.791	1	127	.000	1.731

a. Predictors: (Constant), AI-driven financial literacy

b. Dependent Variable: Crowdfunding start-up capital

Table 1 shows that the correlation coefficient on how Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relate to generation of start-up capital in universities in Rivers State is .189 with coefficient determination of .036. This means that there is a high positive relationship between AI-driven financial literacy education of crowd-funding mechanisms and the generation of start-up capital among students in universities in Rivers state. In other words, there is a 36.0% variation in the generation of start-up capital which could be attributed to access to credit facilities and ability to risk tolerance.

Research Question 2: How does Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relate to generation of start-up capital.?

Table 2: How Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relates to generation of start-up capital.?

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.207	0.35	0.362	.18832	0.35	16.854	1	127	.000	2.212.[b]

a. Predictors: (Constant), AI-driven financial literacy

b. Dependent Variable: Angel investors start-up capital

Table 2 shows that the correlation coefficient on how Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relate to generation of start-up capital in universities in Rivers' state is .207 with coefficient determination of .035. This means that there is a high positive relationship between graduate's AI-driven financial literacy education of angel investors mechanisms and generation of start-up capital among Business Education graduate in universities in Rivers' state. There is a 35.0% variation in the generation of start-up capital which could be attributed to individual varying opportunities and effectiveness in coping with fund raising among the students.

Hypotheses 1: There is no significant relationship between Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms and generation of start-up capital.

Table 3: *Regression Analysis on how Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relates to generation of start-up capital.*

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.444	1	.444	14.791	.000[b]
	Residual	11.952	127	.030		
	Total	12.396	128			

a. Dependent Variable: Crowdfunding start-up capital

b. Predictors: (Constant), AI-driven financial literacy

Table 3 had a calculated 'F' value of 14.791 on Business Education graduates' AI driven financial literacy education of crowd funding mechanisms does not relate significantly to generation of start-up capital in universities in Rivers State had associated probability value of 0.000. hence the probability value of 0.000 is less than the level of significance at 0.05, the null hypotheses is not retained meaning that there is a significant relationship between Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms and generation of start-up capital.

Hypotheses 2: There is no significant relationship between Business Education graduate's AI driven financial literacy education of Angel investors mechanisms and generation of start-up capital.

Table 4: *Regression Analysis on how Business Education graduate's AI-driven financial literacy education of Angel investors mechanisms relates to generation of start-up capital.*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.600	1	21.600	18.906	.000.[b]
	Residual	0.000	127	0.000		
	Total	21.600	128			

a. Dependent Variable: Angel investors start-up capital

b. Predictors: (Constant), AI-driven financial literacy

Table 4. result showed that the calculated value of 'F' 18.906 on how Business Education graduate's AI-driven financial literacy education of Angel investors mechanisms relates to generation of start-up capital in universities in Rivers State had associated probability value of 0.000. hence the probability value of 0.000 is less than the level of significance at 0.05, the null hypotheses is not retained. This result indicates that there is a significant relationship between Business Education graduate's AI driven financial literacy education of Angel investors mechanisms and generation of start-up capital.

Discussions

The result of the study on how Business Education graduate's AI-driven financial literacy education of crowd-funding and angel investors mechanisms relate to generation of start-up capital in universities in Rivers state is positive. There is a positive and significant relationship between AI-driven financial literacy education, crowdfunding and angel investor mechanism and startup capital generation. AI-driven financial literacy education of crowd-funding relationship with start-up capital generation of Business

Education graduates in universities in Rivers State shows the correlation coefficient of .189 with coefficient determination of .036. This indicates that AI-driven financial literacy of crowdfunding has a positive influence on generation of start-up capital. The 36.0% variation in the generation of start-up capital could be attributed to access to credit facilities and ability to risk tolerance. This result is in line with the view of Okiridu and Onwudike (2024) who state that students with operational skills stands to have an edge in the global competitive market hence operational skills are essential for managing day-to-day business activities. Table 3 shows the regression analysis on how Business Education graduate's AI-driven financial literacy education of crowd-funding mechanisms relates to generation of start-up capital. The table had a calculated 'F' value of 14.791 on how AI-driven financial literacy education of crowdfunding does not have any relationship with start-up capital generation of Business Education graduates in universities in Rivers State had associated probability value of 0.000. hence the probability value of 0.000 is less than the level of significance at 0.05, the null hypotheses is not retained meaning that there is a significant relationship between AI-driven financial literacy education of crowdfunding and start-up capital generation of Business Education graduates in universities in Rivers State. Table 2 is a research question 2 on Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relate to generation of start-up capital the table shows the correlation coefficient on how Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relates to generation of start-up capital. The result revealed that AI-driven financial literacy education of angel investors mechanism has a high positive relationship on generation of start-up capital of Business Education graduate in Universities in Rivers State. The result also revealed that there a variation in the generation of start-up capital which could be attributed to individual opportunities and effectiveness in coping with fund raising among the students. The finding of this study is supported by the view of Okiridu et al, (2024) who assert that emerging technologies play a crucial role in enhancing effectiveness in knowledge-driven work environments. These technologies, including artificial intelligence (AI), cybersecurity, and cloud-based platforms, empower organizations and individuals to gather, process, and use information more efficiently. This leads to better decision-making, innovation, and productivity. Table 4. which the regression analysis on how Business Education graduate's AI-driven financial literacy education of angel investors mechanisms relates to generation of start-up capital. The result showed that AI-driven financial literacy education of Angel investors mechanisms relates to generation of start-up capital in universities in Rivers State. The null hypotheses is not retained meaning that AI-driven financial literacy education of Angel investors mechanisms has a significant relationship with the generation of start-up capital of Business Education graduates in universities in Rivers State.

Conclusion

Based on the findings of the study the researcher concludes that there is a high positive relationship between artificial **Intelligence driven financial literacy education** and start-**up capital generation among Business Education graduates in universities in Rivers State**. The results of the study also had it that Al-driven financial literacy education had a high positive significant relationship on improved start-up capital generation of Business Education graduates in universities in Rivers State hence all the hypotheses were all rejected for the alternate. It was also concluded that the inclusion of AI in curriculum to translate to teaching and learning will enhance the acquisition of financial literacy skills of Business Education graduates in universities in Rivers State.

Recommendations

Based on the findings, the following recommendations were made that:

1. Administrators should organise training and workshops on AI-driven crowdfunding investment decision tools
2. Encourage of AI research in financial literacy, with angel investors in full involvement and participation in start-up capital for graduate students.

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