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IMPACT OF TECHNOPRENEURSHIP EDUCATION ON HUMAN CAPITAL DEVELOPMENT AMONG STUDENTS OF TERTIARY INSTITUTIONS IN NIGER STATE: THE MODERATING ROLE OF ENTREPRENEURIAL SELF-EFFICACY

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Abstract

This study examines the impact of Technopreneurship education on human capital development (HCD) among students of tertiary institutions in Niger State, with entrepreneurial self-efficacy (ESE) as a moderating variable. Drawing on human capital theory, the research employed a quantitative approach using structural equation modeling to analyze the relationships between key dimensions of Technopreneurship education and HCD. Findings revealed that business and financial literacy (BFL) significantly influenced HCD ($\beta = 0.194$, $p = 0.002$), while entrepreneurial skills and mindset (ESM) had a stronger positive effect ($\beta = 0.218$, $p = 0.001$). Innovation and creativity (IC) also contributed positively ($\beta = 0.146$, $p = 0.004$), as did technological competence (TC), which showed the strongest effect ($\beta = 0.224$, $p = 0.000$). Although ESE had a weak direct effect on HCD ($\beta = 0.092$, $p = 0.054$), moderation analysis demonstrated its critical role in strengthening the effects of TC ($p = 0.000$) and BFL ($p = 0.006$) on HCD. The results underscore the importance of embedding Technopreneurship education in tertiary curricula to enhance students' capacity for innovation, problem-solving, and adaptability, while highlighting ESE as a psychological enabler that amplifies the developmental outcomes. The study offers implications for policy and practice in advancing entrepreneurship-driven human capital development.

Keywords: Technopreneurship Education, Human Capital Development, Entrepreneurial Self-Efficacy, Technological Competence, Entrepreneurial Skills, Mindset

1. Introduction

Technopreneurship education is a crucial strategy for equipping students in tertiary institutions with the skills needed to thrive in a rapidly evolving, technology-driven economy (Bhutto, 2024). In Nigeria, particularly in Niger State, the growing youth population and the persistent challenge of unemployment underscore the need for educational models that foster both technological innovation and entrepreneurial initiative. Technopreneurship education integrates the principles of entrepreneurship with technological knowledge, enabling students to identify opportunities, create innovative solutions, and transform ideas into sustainable ventures (Mulyany et al., 2023). However, its effectiveness in enhancing human capital development may be significantly influenced by individual psychological factors, particularly entrepreneurial self-efficacy (ESE). ESE plays a pivotal role in determining how well students

translate educational inputs into actionable outcomes (Duong and Vu, 2025).

Despite policy efforts to enhance entrepreneurship and ICT education in Nigerian tertiary institutions, the gap between academic training and real-world demands remains significant. Technopreneurship education offers a transformative approach by fostering problem-solving Bhutto, (2024), critical thinking, and value creation through the application of technology and business principles. This study investigates the impact of technopreneurship education on human capacity development among students of tertiary institutions in Niger State, with specific attention to four key dimensions: technological competence, entrepreneurial skills and mindset, business and financial literacy, and innovation and creativity. Understanding how these dimensions influence students' readiness to contribute meaningfully to the economy is essential for designing responsive educational programs and policies that address the state's development needs.

The study examines the impact of technopreneurship education on human capacity development among students of tertiary institutions in Niger State. The other specific objectives are:

1. To examine the impact of technological competence on human capacity development among students of tertiary institutions in Niger State
2. To determine the impact of entrepreneurial skills and mindset on human capacity development among students of tertiary institutions in Niger State
3. To assess the impact of business and financial literacy on human capacity development among students of tertiary institutions in Niger State
4. To examine the impact of innovation and creativity on human capacity development among students of tertiary institutions in Niger State
5. To determine the moderating role of entrepreneurial Self-efficacy on the impact of technopreneurship education on human capital development among Students of tertiary institutions in Niger State.

2.0 Conceptual, Theoretical Framework and Hypothesis Development

Technopreneurship education is an interdisciplinary approach that combines technological innovation with entrepreneurial training to prepare learners for a dynamic, digital, and knowledge-driven economy (Afraah et al., 2024). It aims to develop entrepreneurial mindsets and enable learners to harness technology for venture creation, economic development, and social transformation (Ndace and Tsado 2021). Technopreneurship education bridges the gap between traditional business education and the rapid technological advancements of the fourth industrial revolution. It emphasizes interdisciplinary learning, combining elements from computer science, engineering, business management, innovation studies, and design thinking (Kavatekar et al., 2025). The educational process typically involves experiential learning, problem-based projects, collaborative ventures, and the use of digital tools to simulate real-world entrepreneurial environments. Technopreneurship education plays a critical role in addressing unemployment, youth restiveness, and socio-economic inequalities by equipping individuals with the skills to create jobs and drive innovation in their communities (Ndace and Tsado 2021). It is increasingly recognized in the context of global sustainability and digital inclusion, as technopreneurs educated in principles of ethical innovation and sustainable development can play a pivotal role in delivering technological solutions that are inclusive, contextually relevant, and aligned with the United Nations Sustainable Development Goals (SDGs) (Suleiman, 2021).

2.2 Technological competence and human capital development

Technological competence (TC) is a crucial aspect of technopreneurship education, particularly in tertiary institutions, where demand for future-ready graduates is increasing. TC encompasses digital literacy and mastery of advanced technologies like programming, data analytics, artificial intelligence, cloud computing, and mobile application development (Omoniyi *et al*., 2025). It equips students with both theoretical and practical skills,

enabling them to become creators of technological solutions rather than passive consumers. TC fosters a paradigm shift in the student experience, transitioning students from consumers to creators of technology, enriching their cognitive and technical capacities. This approach promotes continuous learning and a proactive mindset, critical attributes in today's rapidly evolving digital landscape. TC contributes to human capital development beyond individual employability, enhancing graduates' labor market value and enabling them to pursue entrepreneurial ventures in technology-driven sectors. The Resource-Based View (RBV) Theory supports the integration of TC into technopreneurship education as a strategic means of developing human capital that contributes to organizational innovation and national economic growth (Rosyidah et al., 2024). We therefore, proposed the hypothesis below:

Ho_1 Technological competence has no significant impact on the human capital development among students of tertiary institutions

2.3 Entrepreneurial skills and mindset and human capital development

Entrepreneurial skills and mindset (ESM) are crucial for human capital development, particularly in tertiary education. These skills, such as creativity, resilience, leadership, and strategic thinking, equip students to adapt, create value, and seize opportunities in diverse sectors (Oluwasina et al., 2024). ESM is fostered through experiential education strategies, such as simulations and real-world problem-solving tasks. It enhances employability and adaptability, preparing individuals to navigate change, initiate innovation, and drive social and economic transformation. Embedding entrepreneurship into curricula fosters a culture of value-driven leadership, proactive thinking, and self-confidence among students (Jose & Kushwaha, 2024). This approach transforms students' perspectives on career development, encouraging them to see themselves as job creators and problem-solvers. The Human Capital Theory supports the role of entrepreneurship education in human capital development, highlighting its inclusive and developmental impact on societal goals like poverty reduction and inclusive growth (Bambi and Pea-Assounga, 2025). In line with the review above we proposed the hypothesis thus:

Ho_2 Entrepreneurial skills and mindset has no significant impact on the human capital development among students of tertiary institutions

2.4 Business and financial literacy and human capital development

Business and financial literacy (BFL) are crucial competencies for technopreneurs, enabling them to navigate the complexities of launching and sustaining innovative ventures (Imjai et al., 2025). These literacies cover various areas such as understanding business models, market trends, cost management, budgeting, financial planning, and investment strategies. In tertiary institutions, integrating BFL into the curriculum helps shape well-rounded graduates prepared for dynamic and competitive economies (Boldureanu et al., 2020). Financially literate graduates can understand and influence market systems, manage enterprise finances, and strategize for growth. This competence is increasingly crucial as global economies shift towards knowledge-based systems that favor entrepreneurship and innovation (Pricopoaia et al., 2024). The Human Capital Theory explains the relationship between BFL and human capital development, stating that investment in education and skill development directly increases an individual's productivity and economic value (Nwachukwu, 2024). BFL fosters inclusive development by empowering students from all disciplines and backgrounds to become economically active citizens. The study therefore, draw the hypothesis below:

Ho_3 Business and financial literacy has no significant impact on the human capital development among students of tertiary institutions

2.5 Innovation and creativity and human capital development

Innovation and creativity (IC) are crucial for a future-ready workforce, especially in tertiary education (Javed, 2025). These competencies involve developing novel ideas, products, and services, and are fueled by

imaginative thinking and unconventional problem-solving. In technopreneurship education, these skills are applied to rethinking business models, engaging customers, and transforming organizational structures (Ndace and Tsado 2021) Pedagogical strategies like design thinking, interdisciplinary collaboration, and real-life simulations are used to foster these competencies in students. Universities serve as innovation hubs, offering access to R&D platforms, collaborative learning environments, and mentorship opportunities. Human capital plays a central role in supporting creativity and innovation, which fuel competitiveness and long-term economic progress (Penkala, 2024). The Resource-Based View (RBV) Theory supports this, emphasizing that organizational performance and competitive advantage are largely determined by internal resources, including human capital and innovative capacity. Investing in students' creative and innovative capabilities aligns with RBV principles, developing a workforce capable of long-term innovation, adaptability, and leadership in complex environments (Rosyidah et al., 2024). With this review the fourth hypothesis therefore drawn;

Ho_4 Innovation and creativity has no significant impact on the human capital development among students of tertiary institutions.

2.6 Moderating Role of Entrepreneurial self-efficacy on Technopreneurship Education on Human Capital Development

Entrepreneurial Self-Efficacy (ESE) plays a crucial role in understanding individual differences in students' responses to technopreneurship training (Kehinde, 2023). Low self-efficacy may lead to disengagement or underperformance, despite exposure to the same educational content. ESE, particularly in ICT contexts, amplifies the effectiveness of entrepreneurial learning in enhancing technopreneurial intentions among students in technical fields. It also strengthens the relationship between entrepreneurial competencies and students' entrepreneurial intentions in higher education contexts (Abbasi et al., 2024). Bandura's Social Cognitive Theory (Bandura, 1999), provides a theoretical foundation for understanding this moderating role, positing that behavior is influenced by personal factors, environmental contexts, and behavior itself. ESE significantly influences students' entrepreneurial intentions and learning outcomes when integrated into experiential learning frameworks (Hutasuhut et al., 2023). By applying this theory, scholars and educators can better design, measure, and enhance technopreneurship programs, ensuring they account for individual psychological readiness and maximize the developmental outcomes of human capital investments. Based on this theoretical and empirical grounding, the following hypothesis is proposed:

Ho_5 Entrepreneurial self-efficacy does not significantly moderate the impact of Technopreneurship on the human capital development among students of tertiary institutions.

3. Methodology

The study adopted a survey research design. It was carried out as an empirical study that assesses the impact of technopreneurship education on human capital development among students of tertiary institutions in Niger State. The respondents were purposively randomly selected across six tertiary institutions in Niger State, representing diverse educational environments**:** one federal university, one state university, one private university, one polytechnic, one college of education, and one institute. Structured survey questionnaire was used to collect data from a sample of 500 final-year students from the selected institutions.

The questionnaire includes both closed-ended and Likert-scale questions (1 = Strongly Disagree to 5 = Strongly Agree), allowing for quantifiable data on students' perceptions and experiences. The instrument is pre-tested for reliability and validity through a pilot study involving 50 students from a similar population. The sample size was calculated using a 95% confidence level and a 5% margin of error, ensuring a robust and representative sample. Data collected were analysed using Partial Least Squares Structural Equation Modeling (SMART-PLS). This advanced statistical tool enabled the researcher to examine the relationships between the dimensions of technopreneurship and human capital development.

4. Results and Discussion

Measurement Model Assessment

Standard reflection indicators including Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE), and indicator loadings were used to assess the measurement model in order to guarantee validity and reliability (see Figure 1). The findings showed that every construct either satisfied or exceeded the accepted criteria for convergent validity and internal consistency.

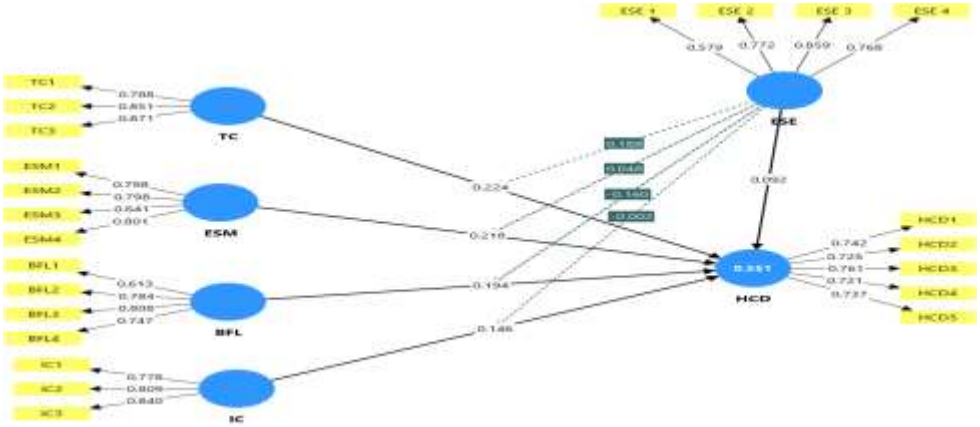

Figure 1: Indicator Loading

With the exception of ESE1, which had a loading of 0.579 and was kept because of its contribution to the model, all indicator loadings were higher than the threshold tolerable value of 0.6. The range of the indicator loadings is 0.579 to 0.871. This implies that there was a strong correlation between each indicator and its corresponding construct.

Table 1: Internal Consistency Table for the Constructs

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extract ed (AVE)
BFL	0.727	0.747	0.829	0.550
ESE	0.745	0.783	0.836	0.565
ESM	0.759	0.775	0.846	0.581
HCD	0.790	0.791	0.856	0.544
IC	0.737	0.740	0.851	0.655
TC	0.788	0.803	0.876	0.701

Source: Researcher's Smart PLS Output, (2025)

All the latent variables' Cronbach's alpha values in Table 1 were above the acceptable threshold of 0.7 suggesting adequate internal consistency. Additionally, each construct's composite reliability values (ranging from 0.740 to 0.803) were significantly above 0.7, which is thought to be a more accurate indicator of reliability in PLS-SEM (Hu et al., 2017). The average variance index was used to evaluate the divergent validity. Accordingly, the variance between one construct and the other ought to be lower than the AVE (Hosseini et al., 2020). In other words, the correlation between one variable and the others in the model had a larger square root of the mean of the absolute extracted variance. These results validate the adequacy of the measurement model and support the structural model assessment.

Structural Model Results

The structural model aimed to test the relationships between TC, IC, ESM and BFL on HCD, both directly and through the moderating influence of ESE. Figure 2 and Table 2 summarise the path coefficients, t-statistics, and p-values.

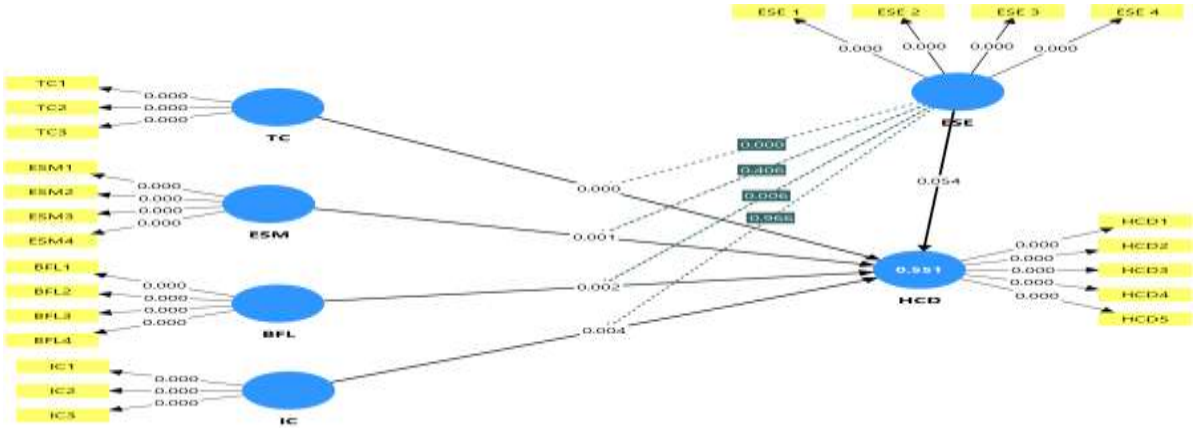

Figure 2: Structural model

Table 2: Path Coefficient

Variable	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
BFL -> HCD	0.194	0.194	0.061	3.165	0.002
ESE -> HCD	0.092	0.096	0.048	1.923	0.054
ESE x BFL -> HCD	-0.160	-0.159	0.058	2.750	0.006
ESE x ESM -> HCD	0.048	0.048	0.058	0.831	0.406
ESE x IC -> HCD	-0.002	0.002	0.053	0.042	0.966
ESE x TC -> HCD	0.188	0.190	0.049	3.801	0.000
ESM -> HCD	0.218	0.216	0.063	3.437	0.001
IC -> HCD	0.146	0.150	0.051	2.866	0.004
TC -> HCD	0.224	0.221	0.055	4.054	0.000

Source: Researcher's Smart PLS Output, (2025)

With the measurement model's strong reliability and validity, the structural model yielded significant results. Most of the path coefficients for direct effects were statistically significant, as reflected in their high t-values and p-values lower than 0.05. The R^2 value for HCD is 0.551, indicating that only 55.1% of the variance in Human Capital Development (HCD) is explained by the independent variables, a relatively moderate explanatory power.

Direct Effects

Business and Financial Literacy (BFL) → Human Capacity Development (HCD)
(β = 0.194, p = 0.002)

The research result indicates that Business and Financial Literacy (BFL) has a positive and statistically significant impact on Human Capacity Development (HCD), with a standardized coefficient (β) of 0.194 and a p-value of

0.002. This means that an increase in BFL is associated with a moderate increase in HCD, and the relationship is unlikely to have occurred by chance. In practical terms, individuals or communities with higher business and financial literacy are more likely to develop essential skills, knowledge, and competencies that enhance their overall capacity and productivity. This finding supports the importance of promoting financial and business education as a means of strengthening human development outcomes. This align with the study of Jumady et al., (2024), who found that financial literacy education significantly improves a composite financial-health score through increased confidence, better debt management, and stronger decision-making.

Entrepreneurial Self-Efficacy (ESE) → Human Capacity Development (HCD)
(β = 0.092, p = 0.054)

The research finding shows that Entrepreneurial Self-Efficacy (ESE) has a positive but weak influence on Human Capacity Development (HCD) among students of tertiary institutions in Niger State, with a standardized coefficient (β) of 0.092. However, the p-value of 0.054 indicates that this relationship is not statistically significant at 0.05 level. This suggests that while there is a slight positive trend implying that students who are more confident in their entrepreneurial abilities may experience better capacity development, the evidence is not strong enough to conclusively support this effect. Therefore, ESE alone may not be a reliable predictor of HCD in this context, and other factors might play a more substantial role. This is contrary to the findings of Kasturba et al., (2022) who found that entrepreneurial self-efficacy significantly and positively predicts entrepreneurial intention among Nigerian university students which suggested a stronger and statistically significant role for ESE in contrast with the finding of this current study where ESE's effect on HCD was weak and marginally non-significant.

Entrepreneurial Skills and Mindset (ESM) → Human Capacity Development (HCD)
(β = 0.218, p = 0.001)

The result indicates that Entrepreneurial Skills and Mindset (ESM) has a positive and statistically significant effect on Human Capacity Development (HCD), with a standardized coefficient (β) of 0.218 and a p-value of 0.001. This means that an increase in ESM is associated with a moderate increase in HCD, and the relationship is highly significant, showing strong evidence that the effect is not due to chance. In practical terms, this suggests that students who possess strong entrepreneurial skills and a growth-oriented mindset are more likely to enhance their knowledge, abilities, and overall capacity to contribute meaningfully to society or the economy. Therefore, fostering entrepreneurial thinking and skills can be an effective strategy for advancing human capacity development, particularly among students in tertiary institutions. One supportive study by Jiatong et al. (2021) found that an entrepreneurial mindset positively and significantly influences entrepreneurial intention among university students which aligns with the finding of this current study that Entrepreneurial Skills and Mindset (ESM) strongly predicts Human Capacity Development.

Innovation and Creativity (IC) → Human Capacity Development (HCD)
(β = 0.146, p = 0.004)

The research result shows that Innovation and Creativity (IC) has a positive and statistically significant** impact on Human Capacity Development (HCD), with a standardized coefficient (β) of 0.146 and a p-value of 0.004. This indicates that higher levels of innovation and creative thinking are moderately associated with increased development of human capacity, and the relationship is unlikely to have occurred by chance. In practical terms, this means that fostering innovation and creativity among individuals particularly students—can contribute meaningfully to building their skills, adaptability, and overall potential. The finding underscores the importance of encouraging creative problem-solving and innovative thinking as part of efforts to enhance human capacity development. This result aligns with the study of Isabirye et al. (2025) who emphasizes that integrating creativity and innovation into educational curricula cultivates essential skills and competencies in learners, reinforcing the finding of this

study that Innovation and Creativity positively and significantly enhance Human Capacity Development.

Technological Competence (TC) → Human Capacity Development (HCD)
(β = 0.224, p = 0.000)

The research finding indicates that Technological Competence (TC) has a positive and highly significant effect on Human Capacity Development (HCD), with a standardized coefficient (β) of 0.224 and a p-value of 0.000. This suggests that as individuals, particularly students, improve their technological skills and ability to use digital tools effectively, their overall human capacity such as problem-solving, productivity, and adaptability also increases. The strength and significance of this relationship highlight the crucial role of technological competence in developing the knowledge, skills, and capabilities needed to thrive in today's innovation driven and digital world. This is in support of the result of Song et al., (2025) who also demonstrated that undergraduate students' digital competence including problem solving, content creation, and collaboration had a significant positive impact on academic achievement, reinforcing the finding of this current study that Technological Competence strongly promotes Human Capacity Development.

Moderating Effects

Out **o**f the four interaction terms, only **ESE x TC -> HCD** and **ESE x BFL -> HCD** showed statistically significant moderation effects with P-value of 0.00 and 0.006 respectively. Specifically, the result indicates that Entrepreneurial Self-Efficacy (ESE) significantly weakens the positive effect of Technological Competence (TC) on Human Capacity Development (HCD), suggesting that higher ESE reduces the reliance on TC for enhancing HCD among students. One relevant study by Mutohhari et al. (2023) found that technological competencies significantly moderated the impact of entrepreneurial personality on entrepreneurial intention suggesting that the strength of technology-based skills can alter how personal traits influence outcomes. Conversely, the result shows that Entrepreneurial Self-Efficacy (ESE) significantly and negatively moderates the relationship between Business and Financial Literacy (BFL) and Human Capacity Development (HCD), meaning higher ESE reduces BFL's positive impact on HCD among students. This aligns with the result of Asdar, and Hasbiah, (2024) who found that entrepreneurial self-efficacy did not strengthen the influence of financial literacy on entrepreneurial behavior among students in fact, self-efficacy failed to enhance that link.

5. Conclusion and Recommendations

This study explored how entrepreneurial self-efficacy moderates the effect of technopreneurship education on human capital development and concluded that technopreneurship education components such as Business and Financial Literacy, Entrepreneurial Skills and Mindset, Innovation and Creativity, and Technological Competence significantly contribute to Human Capacity Development (HCD) among students of tertiary institutions in Niger State. However, Entrepreneurial Self-Efficacy (ESE), while slightly positive, was not a strong direct predictor of HCD. More importantly, ESE demonstrated a negative moderating effect on the relationships between both Technological Competence and Business and Financial Literacy with HCD, indicating that higher ESE may reduce students' dependence on these competencies for capacity development. These findings highlight the complex role of self-belief in entrepreneurial contexts.

Based on the results, it is recommended that technopreneurship education programs strike a balance between building entrepreneurial confidence and reinforcing the practical competencies needed for human capital growth. Institutions should integrate experiential learning methods that develop both technical skills and realistic entrepreneurial self-efficacy. Educators and policymakers should also consider designing targeted interventions that support students with high ESE to apply their confidence constructively alongside technological and financial competencies, ensuring a well-rounded approach to capacity development

References

Abbasi, H., Shah, S., & Shah, M. (2024). Impact of Entrepreneurial Competency, Entrepreneurial Mindset, and Self-Esteem on Entrepreneurial Intention with the moderating role of Self-Efficacy. Evidence from Pakistan. *NICE Research Journal* https://doi.org/10.51239/nrjss.v17i3.473.

Afraah, S. M., Sutopo, W., & Hisjam, M. (2024). Development of PBL on technopreneur education to encourage faster technology commercialization. *Journal of Applied Research in Higher Education*, *16*(5), 1659-1673.

Asdar, A. S., & Hasbiah, S. (2024). Do Self-Efficacy, Financial Literacy, and Digital Literacy among Students Contribute to Entrepreneurial Behavior through Entrepreneurship Education?. *Pinisi Journal of Entrepreneurship Review*, *2*(1), 32-50.

Bambi, P. D. R., & Pea-Assounga, J. B. B. (2025). Unraveling the interplay of research investment, educational attainment, human capital development, and economic advancement in technological innovation: A panel VAR approach. *Education and Information Technologies*, *30*(3), 3309-3341.

Bandura, A. (1999). Social cognitive theory of personality. *Handbook of personality*, *2*(1), 154-196.

Bhutto, B. (2024). Motivating Factors and Work-Based Learning in Technopreneurship Education: A Pathway to Entrepreneurship Education.

Bhutto, B. (2024). Technopreneurship Education in Graduate Programs: Cultivating an Entrepreneurial Mindset. Through Work-Based Learning. DOI:10.13140/RG.2.2.11376.88327

Boldureanu, G., Ionescu, A. M., Bercu, A. M., Bedrule-Grigoruță, M. V., & Boldureanu, D. (2020). Entrepreneurship education through successful entrepreneurial models in higher education institutions. *Sustainability*, *12*(3), 1267.

Duong, C. D., & Vu, T. N. (2025). Entrepreneurial education and higher education students'e-entrepreneurial intention: a moderated mediation model of generative AI incorporation and e-entrepreneurial self-efficacy. *Higher Education, Skills and Work-Based Learning*, 1-25.

Hutasuhut, S., Thamrin, T., & Ridwan, M. (2023). A Creative Model of Entrepreneurship Learning to Improve Self-Efficacy, Entrepreneurial Intention, and Student Achievement. *Creativity Studies*. https://doi.org/10.3846/cs.2023.13468.

Imjai, N., Meesook, K., Somwethee, P., Usman, B., & Aujirapongpan, S. (2025). Exploring the impact of digital financial literacy to effective financial planning and control: Perspectives on competitiveness of Thai micropreneurs. *Social Sciences & Humanities Open*, *11*, 101307.

Isabirye, A. K., Moloi, K. C., Lebelo, R. S., & Khan, S. (2025). Cultivating Creativity and Innovation in the School Curriculum for the 21st Century: Opportunities and Challenges. *Journal of Ecohumanism*, *4*(3), 334-348.

Javed, F. (2025). Preparing for Tomorrow: Evaluating and Innovating Educational Systems for Future Competence. In *Fostering Teacher Skills and Critical Thinking in Modern Education* (pp. 43-78). IGI Global Scientific Publishing.

Jiatong, W., Murad, M., Bajun, F., Tufail, M. S., Mirza, F., & Rafiq, M. (2021). Impact of entrepreneurial education, mindset, and creativity on entrepreneurial intention: mediating role of entrepreneurial self-efficacy. *Frontiers in psychology*, *12*, 724440.

Jose, E. M. K., & Kushwaha, B. P. (2024). Technopreneurship in startups and understanding their entrepreneurial mindset: an empirical evidence. International Journal of Management and Enterprise Development**,** 23**(4),** 335-354.

Jumady, E., Alam, S., Hasbiyadi, H., Fajriah, Y., & Anggraini, Y. (2024). The effect of financial planning on consumer debt management: the role of financial literacy, self-efficacy, and financial motivation. *Atestasi: Jurnal Ilmiah Akuntansi*, *7*(1), 340-368.

Kavatekar, S., Kumar, K., & Annam, A. K. (2025). 9 TechnopreneurshipinIndia. *Technopreneurship and Sustainability: Innovation, Challenges, and Opportunities*, 159.

Kehinde, O. A. (2023). Influence of Entrepreneurship Self-Efficacy and Proactive Personality on Intention towards Technopreneurship among Undergraduate Students. *Gender and Behaviour, 21*(3), 22165-22176.

Mulyany, R., Muhammad, S., Geumpana, T. A., Halim, H., & Pertiwi, C. D. (2023). A Potential Framework For an Impactful Technopreneurship Education. *Indonesian Journal of Business and Entrepreneurship (IJBE)*, *9*(2), 208-208.

Mulyany, R., Muhammad, S., Geumpana, T. A., Halim, H., Amiren, M., Muslim, M., & Dwi Pertiwi, C. (2023). A potential framework for an impactful technopreneurship education. *Indonesian Journal of Business and Entrepreneurship, 9*(2), 1- 12. DOI: http://dx.doi.org/10.17358/IJBE.9.2.208

Ndace, **S.,** & Tsado, W., (2021). Impact of Technopreneurship Education on Human Capacity Building in Bida metropolitan. *CEDTECH International Journal of Management Studies and Entrepreneurial Development.* Vol.2, No.2, pp 13-39

Nwachukwu, G. O. (2024). Human capital development: A driver for educational improvement in Nigeria. *British journal of education, 12*(6), 30-39.

Oluwasina, B. R., Olatoye, A. O., Adebayo, A. A., & Ajibade, A. A. (2024). Technopreneurship and Human Resource Management in Nigeria. *Journal of Business Development and Management Research. 06*(7), 1-17

Omoniyi, O. E., Ndace, S., Kolo R. F., & Adeniyi, B. C. (2025). Generational cohorts as key drivers of technology adoption in the tech industry. *Impressive Journal of Management and Social Sciences 1*(2), 11-21. https://doi.org/10.33003/ijmass-2025.v1i2.16.11-21

Penkala, M. (2024). The Role of Human Capital in the Innovation Management Process. *Humanities and Social Sciences quarterly.* https://doi.org/10.7862/rz.2024.hss.34.

Pricopoaia, O., Busila, A. V., Cristache, N., Susanu, I., & Matis, C. (2024). Challenges for entrepreneurial innovation: Startups as tools for a better knowledge-based economy. *International Entrepreneurship and Management Journal*, *20*(2), 969-1010.

Rosyidah, U., Djatmika, E., Wardoyo, C., Restuningdiah, N., & Soetjipto, B. (2024). Unleashing Innovation Potential: The Role of Human Capital and Digital Capability to Increase Firm Performance for Sustainable Development Goals (SDGS) in Lombok Island. *Journal of Lifestyle and SDGs Review.* https://doi.org/10.47172/2965-730x.sdgsreview.v5.n01.pe02670.

Suleiman, Y. (2021). Integrating technopreneurship education in Nigerian universities: strategy for decreasing youth unemployment. *Journal of Education and Research*, *11*(1), 49-76.