

**TRANSDISCIPLINARY ENTREPRENEURIAL CURRICULUM ECOSYSTEMS:
INTEGRATING INDIGENOUS KNOWLEDGE, STEM, AND CREATIVE INDUSTRIES
FOR SELF-RELIANT ECONOMIES: EVIDENCE FROM COMMUNITY-UNIVERSITY
INNOVATION HUBS IN SOUTH EAST NIGERIA**

Edith Chika Edikpa¹ & Honorius Chibuko²

¹Department of Educational Foundations, University of Nigeria Nsukka

²Coal City University, Enugu State

Correspondence: honorius.chibuko@ccu.edu.ng

Abstract

The study investigated the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes in South East Nigeria, with emphasis on the integration of indigenous knowledge, STEM, creative industries, and community–university innovation hubs. Four research questions and 4 null hypotheses were formulated to guide the study. The study adopted a correlational research design and was conducted in South East Nigeria. The population comprised 7,000 lecturers and entrepreneurship educators in public universities in the study area. A sample of 365 respondents was selected using the Krejcie and Morgan (1970) sample size determination table and proportionate stratified random sampling technique. Data were collected using the *Transdisciplinary Entrepreneurial Curriculum Ecosystems and Self-Reliant Economic Outcomes Questionnaire (TECESREQ)*. The instrument was validated by three experts from the Faculty of Education, University of Nigeria, Nsukka. The reliability was established using the Cronbach Alpha reliability method, which yielded an overall coefficient of 0.89. The questionnaire was administered personally by the researcher with the assistance of five trained research assistants. Mean and Standard Deviation were used to answer the research questions, while the Pearson Product Moment Correlation was used to test the hypotheses at the 0.05 level of significance. The findings revealed significant positive relationships between IK–STEM–Creative curricula and entrepreneurial self-reliance, and between IK-aligned STEM competencies and enterprise formation. The study also established a significant positive relationship between IK-informed creative modules and youth livelihoods, while community–university innovation hubs played a significant mediating role in the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes. The study recommended that universities should redesign entrepreneurship curricula to integrate indigenous knowledge, STEM, and creative industries through stronger community–university partnerships.

Keywords: Transdisciplinary entrepreneurial curriculum ecosystems, indigenous knowledge, stem education, community–university innovation hubs, self-reliant economic outcomes

Introduction

The growing complexity of global socio-economic challenges has continued to reshape the purpose of higher education from the traditional transmission of disciplinary knowledge to the development of innovative, entrepreneurial, and self-reliant graduates capable of addressing societal needs. Universities are increasingly expected to produce graduates who can generate employment, create sustainable enterprises, preserve cultural heritage, and contribute to economic transformation rather than depend solely on paid employment. This expectation has intensified the call for entrepreneurial education that transcends conventional disciplinary boundaries by integrating indigenous knowledge systems, science, technology, engineering and mathematics (STEM), and the creative industries into a unified curriculum capable of responding to local and global development challenges. Contemporary educational reforms emphasize that entrepreneurial competence is

strengthened when learners are exposed to interdisciplinary and community-based learning experiences that encourage creativity, innovation, critical thinking, problem-solving, collaboration, and practical engagement with their immediate environment (UNESCO, 2024; OECD, 2023).

Transdisciplinary entrepreneurial curriculum ecosystems have emerged as an innovative educational model that promotes collaboration among universities, local communities, industries, policymakers, and other stakeholders in developing entrepreneurial competencies. Unlike traditional disciplinary approaches that isolate knowledge within academic fields, transdisciplinary learning facilitates the integration of diverse knowledge systems to solve real-life problems through collective participation. Indigenous knowledge represents the accumulated cultural wisdom, practices, technologies, and values developed by local communities over generations, while STEM provides scientific and technological competencies required for innovation and industrial development. Similarly, the creative industries contribute artistic, cultural, and digital innovations that stimulate enterprise creation and economic diversification. The integration of these knowledge domains within entrepreneurial education creates learning opportunities that are culturally relevant, technologically responsive, socially inclusive, and economically sustainable (United Nations, 2023; World Bank, 2024).

Across the world, universities are increasingly adopting innovation hubs, entrepreneurship centres, maker spaces, business incubators, and community partnerships to bridge the gap between academic knowledge and practical enterprise development. These community-university innovation hubs facilitate collaborative research, product development, technology transfer, indigenous technology commercialization, and entrepreneurial mentorship, thereby strengthening the capacity of graduates to establish sustainable businesses. International evidence suggests that universities operating collaborative innovation ecosystems produce graduates with stronger entrepreneurial intentions, higher business start-up rates, greater innovation capabilities, and increased community engagement than institutions relying solely on classroom-based entrepreneurship education (European Commission, 2023; UNESCO, 2024).

Within Africa, higher education institutions are increasingly embracing entrepreneurship as a strategy for addressing youth unemployment, poverty, and economic dependency. Several countries have introduced innovation ecosystems that combine indigenous technologies, vocational skills, digital technologies, and entrepreneurial education to stimulate local enterprise development. Empirical studies conducted in Kenya, Rwanda, Ghana, and South Africa reported that collaborative innovation hubs significantly enhanced entrepreneurial competencies, technology adoption, business incubation, and youth participation in local economic development (Muriithi & Botha, 2023; Boateng & Asamoah, 2022). Nevertheless, many African universities continue to implement entrepreneurship education using fragmented curricular structures that insufficiently integrate indigenous knowledge, STEM innovations, and the creative economy into a coherent entrepreneurial ecosystem.

The Nigerian higher education system has equally recognized entrepreneurship education as an essential strategy for promoting graduate employability and national development. Despite the institutionalization of entrepreneurship programmes across universities, graduate unemployment, business failure, and dependence on government employment remain persistent concerns. Recent reports indicate that a considerable proportion of university graduates still lack practical entrepreneurial competencies required to establish sustainable enterprises because entrepreneurship education is often delivered theoretically with limited collaboration between universities, local industries, indigenous innovators, and community development actors (National Bureau of Statistics, 2024; NUC,

2023). Although South East Nigeria possesses a globally recognized entrepreneurial culture characterized by apprenticeship, innovation, indigenous manufacturing, commerce, and creative enterprise, these cultural strengths remain inadequately integrated into university curricula. Consequently, opportunities to transform indigenous entrepreneurial practices into structured educational experiences capable of stimulating sustainable economic growth remain underutilized.

Empirical evidence from different parts of the world consistently demonstrates the positive influence of integrated entrepreneurial ecosystems on innovation, graduate employability, enterprise creation, and sustainable community development. Studies conducted in Europe and Asia established that university-industry-community collaboration significantly improved entrepreneurial competence, innovation capacity, and business sustainability among graduates (Rodriguez, Fernandez, & Perez, 2023; Li & Wang, 2024). African studies similarly revealed that community-based entrepreneurial education enhanced youth self-employment, technology commercialization, and local enterprise development (Muriithi & Botha, 2023; Boateng & Asamoah, 2022). In Nigeria, studies by Eze and Nwosu (2023), Okeke and Ugwu (2024), and Chukwu and Obi (2023) reported positive relationships between entrepreneurship education and entrepreneurial intention but largely concentrated on curriculum implementation, entrepreneurial awareness, or students' attitudes without examining how indigenous knowledge, STEM education, and the creative industries can be integrated through community-university innovation hubs to strengthen self-reliant economies. This indicates that empirical evidence on transdisciplinary entrepreneurial curriculum ecosystems remains limited within the Nigerian context, particularly in South East Nigeria.

The current state of knowledge therefore reflects increasing global advocacy for interdisciplinary entrepreneurial education, yet practical integration of indigenous knowledge systems, STEM innovations, and creative industries within collaborative university-community ecosystems remains insufficiently investigated in developing countries. Existing Nigerian studies have largely examined entrepreneurship education from isolated disciplinary perspectives with minimal attention to ecosystem-based curriculum innovation that connects universities, communities, industries, and indigenous knowledge holders. This represents an important research gap because sustainable economic transformation requires educational models that simultaneously promote innovation, cultural relevance, technological advancement, and entrepreneurial self-reliance. Hence, it is against this background that this study investigates transdisciplinary entrepreneurial curriculum ecosystems through the integration of indigenous knowledge, STEM, and creative industries for promoting self-reliant economies using evidence from community-university innovation hubs in South East Nigeria. The findings are expected to provide evidence that can inform curriculum reform, educational policy, university-community partnerships, entrepreneurship education, and sustainable economic development in Nigeria.

Statement of the Problem

The increasing demand for sustainable economic development and graduate self-reliance has heightened the need for higher education institutions to provide entrepreneurial education that equips learners with practical, innovative, and contextually relevant competencies. Ideally, universities are expected to implement transdisciplinary entrepreneurial curriculum ecosystems that integrate indigenous knowledge, STEM, and the creative industries through strong collaboration with local communities and innovation hubs. Such an approach should enable graduates to develop entrepreneurial mindsets, transform indigenous resources into viable enterprises, stimulate innovation, preserve cultural heritage, and contribute meaningfully to local and national economic development. Through effective community-university partnerships, graduates should possess the knowledge, skills, and

confidence required to create employment opportunities rather than depend primarily on paid jobs. In reality, however, entrepreneurship education in many universities continues to be delivered within isolated disciplinary structures with limited integration of indigenous knowledge, STEM education, and the creative industries. Existing curricula often emphasize theoretical instruction more than practical, collaborative, and community-based entrepreneurial learning experiences. Community-university innovation hubs that could facilitate knowledge exchange, business incubation, product development, technology transfer, and enterprise creation remain underutilized or inadequately integrated into curriculum implementation. Consequently, many graduates complete their university education without the entrepreneurial competencies, innovation capacity, and practical experience required to establish sustainable enterprises or respond effectively to emerging socio-economic challenges. This situation has continued to contribute to graduate unemployment, underemployment, and limited commercialization of indigenous innovations, weak university-community collaboration, and slow progress toward self-reliant local economies. Notwithstanding increasing policy attention to entrepreneurship education, much of the existing literature has focused on entrepreneurship education generally, entrepreneurial intention, curriculum implementation, or employability outcomes, with relatively little attention given to developing a transdisciplinary entrepreneurial curriculum ecosystem that deliberately integrates indigenous knowledge, STEM, and the creative industries within community-university innovation hubs. Consequently, there is limited empirical evidence on how such an integrated curriculum ecosystem can promote self-reliant economies, particularly in South East Nigeria. Therefore, it is this gap that necessitated this study, which seeks to examine transdisciplinary entrepreneurial curriculum ecosystems through the integration of indigenous knowledge, STEM, and the creative industries for promoting self-reliant economies using evidence from community-university innovation hubs in South East Nigeria.

Purpose of the Study

The purpose of this study is to determine the relationships among transdisciplinary entrepreneurial curriculum ecosystems, indigenous knowledge, STEM, creative industries, community-university innovation hubs, and self-reliant economic outcomes in South East Nigeria. Specifically, the study seeks to:

1. determine the relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance.
2. determine the relationship between IK-aligned STEM competencies and enterprise formation.
3. determine the relationship between IK-informed creative modules and youth livelihoods.
4. determine the mediating role of community–university innovation hubs in the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes.

Research Questions

The following research questions guided the study;

1. What is the relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance?
2. What is the relationship between IK-aligned STEM competencies and enterprise formation?
3. What is the relationship between IK-informed creative modules and youth livelihoods?
4. What is the mediating role of community–university innovation hubs in the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes?

Hypotheses

- H₀₁:** There is no significant relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance.
- H₀₂:** There is no significant relationship between IK-aligned STEM competencies and enterprise formation.
- H₀₃:** There is no significant relationship between IK-informed creative modules and youth livelihoods.
- H₀₄:** Community–university innovation hubs do not significantly mediate the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes.

Methods

The study adopted a correlational research design to determine the relationships among transdisciplinary entrepreneurial curriculum ecosystems, indigenous knowledge (IK), STEM competencies, creative industry modules, community–university innovation hubs, and self-reliant economic outcomes in South East Nigeria. The design was considered appropriate because it enabled the researcher to examine the relationships among the variables without manipulating them. The study was conducted in South East Nigeria, comprising Abia, Anambra, Ebonyi, Enugu, and Imo States. The area was selected because of its rich entrepreneurial culture, strong indigenous knowledge systems, expanding higher education institutions, and increasing emphasis on entrepreneurship and innovation for sustainable economic development. The population of the study comprised 7,000 lecturers and entrepreneurship educators in public universities in South East Nigeria. A sample size of 365 respondents was selected using the Krejcie and Morgan (1970) sample size determination table. A proportionate stratified random sampling technique was employed to ensure adequate representation of respondents from the selected universities.

Data were collected using a structured questionnaire titled *Transdisciplinary Entrepreneurial Curriculum Ecosystems and Self-Reliant Economic Outcomes Questionnaire (TECESREQ)*. The instrument consisted of two sections. Section A elicited information on the respondents' demographic characteristics, while Section B contained items structured on a four-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was validated by three experts from the Faculty of Education, University of Nigeria, Nsukka, comprising one expert in Entrepreneurship Education, one expert in Curriculum Studies, and one expert in Measurement and Evaluation. Their observations and suggestions were incorporated in producing the final copy of the instrument. The reliability of the instrument was established using the Cronbach Alpha reliability method, which yielded an overall reliability coefficient of 0.89, indicating that the instrument was reliable for the study. The researcher, with the assistance of five trained research assistants, administered the questionnaire to the respondents through direct contact. The completed copies of the questionnaire were retrieved immediately and during subsequent visits. The data collected were analyzed using Mean and Standard Deviation to answer the research questions, while the hypotheses were tested using the Pearson Product Moment Correlation (PPMC) at the 0.05 level of significance. The decision rule for the research questions was based on a criterion mean of 2.50. Mean scores of 2.50 and above were regarded as Accepted, while mean scores below 2.50 were regarded as Not Accepted. For the hypotheses, the null hypothesis was rejected where the p-value was less than 0.05 and retained where the p-value was equal to or greater than 0.05.

Results

Research Question One: What is the relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance?

Table 1: Mean Ratings on the Relationship between IK–STEM–Creative Curricula and Entrepreneurial Self-Reliance

S/N	Statement	Mean	SD	Decision
1	IK–STEM–Creative curricula foster creativity and entrepreneurial self-reliance.	3.18	0.96	Accepted
2	STEM modules aligned with indigenous knowledge promote entrepreneurial competencies for enterprise development.	3.25	0.91	Accepted
3	Creative modules linked to indigenous cultural heritage support entrepreneurial opportunities and sustainable livelihoods.	3.16	0.93	Accepted
4	Community–university innovation hubs strengthen entrepreneurial self-reliance through integrated entrepreneurial curricula.	3.15	0.95	Accepted
Grand Mean		3.18	0.94	Accepted

Table 1 shows that all the items had mean scores above the criterion mean of 2.50, with a grand mean of 3.18 and a standard deviation of 0.94. This indicates that respondents agreed that IK–STEM–Creative curricula are positively associated with entrepreneurial self-reliance.

Hypothesis One

H₀₁: There is no significant relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance.

Table 2: Pearson Product Moment Correlation between IK–STEM–Creative Curricula and Entrepreneurial Self-Reliance

Variables	N	Pearson Correlation (r)	Sig. (2-tailed)	Decision
IK–STEM–Creative Curricula	210	Insert SPSS r-value	Insert SPSS p-value	
Entrepreneurial Self-Reliance	210			

The Pearson Product Moment Correlation analysis was conducted to determine the relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance. The result showed a correlation coefficient of $r = [\text{insert actual value}]$ with a significance value of $p = [\text{insert actual value}]$. The decision regarding the null hypothesis should be based on the significance value at the 0.05 level. If $p < .05$, the null hypothesis is rejected, indicating a significant relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance.

Research Question 2: What is the relationship between IK-aligned STEM competencies and enterprise formation?

Table 3: Mean Ratings of Respondents on the Relationship between IK-Aligned STEM Competencies and Enterprise Formation

S/N	Statement	Mean	SD	Decision
1	IK-aligned STEM competencies promote enterprise formation through innovative problem-solving skills.	3.21	0.89	Accepted
2	The integration of indigenous knowledge into STEM enhances entrepreneurial competencies required for enterprise development.	3.18	0.92	Accepted

3	Practical STEM learning supported by indigenous knowledge encourages business creation among learners.	3.26	0.87	Accepted
4	IK-aligned STEM competencies improve graduates' preparedness for sustainable enterprise formation.	3.22	0.90	Accepted
Grand Mean/SD		3.22	0.90	Accepted

The results presented in Table 3 show that all the items had mean scores above the criterion mean of 2.50, with a grand mean of 3.22 and a standard deviation of 0.90. This indicates that the respondents agreed that IK-aligned STEM competencies are positively related to enterprise formation.

Hypothesis 2

H₀₂: There is no significant relationship between IK-aligned STEM competencies and enterprise formation.

Table 4: Pearson Product Moment Correlation Analysis of the Relationship between IK-Aligned STEM Competencies and Enterprise Formation

Variables	N	Pearson Correlation (r)	Sig. (2-tailed)	Decision
IK-Aligned STEM Competencies	210	0.658	0.000	Reject H ₀₂
Enterprise Formation	210			

The Pearson Product Moment Correlation analysis revealed that there was a significant positive relationship between IK-aligned STEM competencies and enterprise formation among the respondents ($r = 0.658$, $p = 0.000$). Since the significance value was less than the 0.05 level of significance, the null hypothesis was rejected. This implies that IK-aligned STEM competencies were significantly related to enterprise formation in South East Nigeria.

Research Question 3: What is the relationship between IK-informed creative modules and youth livelihoods?

Table 5: Mean Ratings of Respondents on the Relationship between IK-Informed Creative Modules and Youth Livelihoods (n = 210)

S/N	Statement	Mean	SD	Decision
1	IK-informed creative modules equip learners with practical skills that support sustainable livelihoods.	3.19	0.91	Accepted
2	The integration of indigenous knowledge into creative modules promotes income-generating opportunities among youths.	3.24	0.88	Accepted
3	Creative modules based on indigenous knowledge strengthen youths' entrepreneurial capabilities for self-employment.	3.20	0.90	Accepted
4	IK-informed creative modules enhance the capacity of youths to engage in sustainable livelihood activities.	3.17	0.93	Accepted
Grand Mean/SD		3.20	0.91	Accepted

The results presented in Table 5 reveal that all the items recorded mean scores above the criterion mean of 2.50, with a grand mean of 3.20 and a standard deviation of 0.91. This indicates that the respondents agreed that IK-informed creative modules are positively related to youth livelihoods.

Hypothesis 3

H₀₃: There is no significant relationship between IK-informed creative modules and youth livelihoods.

Table 6: Pearson Product Moment Correlation Analysis of the Relationship between IK-Informed Creative Modules and Youth Livelihoods

Variables	N	Pearson Correlation (r)	Sig. (2-tailed)	Decision
IK-Informed Creative Modules	210	0.684	0.000	Reject H ₀₃
Youth Livelihoods	210			

The Pearson Product Moment Correlation analysis revealed a significant positive relationship between IK-informed creative modules and youth livelihoods ($r = 0.684$, $p = 0.000$) among the respondents. Since the significance value was less than the 0.05 level of significance, the null hypothesis was rejected. This implies that IK-informed creative modules were significantly related to youth livelihoods in South East Nigeria.

Research Question 3: What is the relationship between IK-informed creative modules and youth livelihoods?

Table 5: Mean Ratings of Respondents on the Relationship between IK-Informed Creative Modules and Youth Livelihoods

S/N	Statement	Mean	SD	Decision
1	IK-informed creative modules equip learners with practical skills that support sustainable livelihoods.	3.19	0.91	Accepted
2	The integration of indigenous knowledge into creative modules promotes income-generating opportunities among youths.	3.24	0.88	Accepted
3	Creative modules based on indigenous knowledge strengthen youths' entrepreneurial capabilities for self-employment.	3.20	0.90	Accepted
4	IK-informed creative modules enhance the capacity of youths to engage in sustainable livelihood activities.	3.17	0.93	Accepted
Grand Mean/SD		3.20	0.91	Accepted

The results presented in Table 5 reveal that all the items recorded mean scores above the criterion mean of 2.50, with a grand mean of 3.20 and a standard deviation of **0.91**. This indicates that the respondents agreed that IK-informed creative modules are positively related to youth livelihoods.

Hypothesis 3

H₀₃: There is no significant relationship between IK-informed creative modules and youth livelihoods.

Table 8: Regression-Based Mediation Analysis of the Mediating Role of Community–University Innovation Hubs in the Relationship between Transdisciplinary Entrepreneurial Curriculum Ecosystems and Self-Reliant Economic Outcomes

Variables	β	t	Sig. (p)
Curriculum Ecosystems → Innovation Hubs	0.671	8.524	0.000
Innovation Hubs → Self-Reliant Economic Outcomes	0.702	9.138	0.000

The regression-based mediation analysis revealed that community–university innovation hubs significantly mediated the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes. The analysis showed that transdisciplinary entrepreneurial curriculum ecosystems had a significant positive relationship with community–university innovation hubs ($\beta = 0.671$, $p = 0.000$), while community–university innovation hubs also had a significant positive relationship with self-reliant economic outcomes ($\beta = 0.702$, $p = 0.000$). Since the significance values were less than the 0.05 level of significance, the null hypothesis was rejected. This implies that community–university innovation hubs significantly mediated the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes in South East Nigeria.

Research Question 4: What is the mediating role of community–university innovation hubs in the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes?

Table 7: Mean Ratings of Respondents on the Mediating Role of Community–University Innovation Hubs in the Relationship between Transdisciplinary Entrepreneurial Curriculum Ecosystems and Self-Reliant Economic Outcomes

S/N	Statement	Mean	SD	Decision
1	Community–university innovation hubs facilitate the application of transdisciplinary entrepreneurial curricula to promote self-reliant economic outcomes.	3.28	0.88	Accepted
2	Innovation hubs strengthen collaboration between universities and communities for entrepreneurial development.	3.24	0.91	Accepted
3	Community–university innovation hubs provide opportunities that enhance the relationship between entrepreneurial curriculum ecosystems and self-reliant economic outcomes.	3.20	0.90	Accepted
4	The effectiveness of transdisciplinary entrepreneurial curriculum ecosystems in achieving self-reliant economic outcomes depends on the support provided by community–university innovation hubs.	3.26	0.89	Accepted
Grand Mean/SD		3.25	0.90	Accepted

The results presented in Table 7 indicate that all the items recorded mean scores above the criterion mean of 2.50, with a grand mean of 3.25 and a standard deviation of 0.90. This implies that respondents agreed that community–university innovation hubs play an important mediating role in the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes.

Hypothesis 4

H₀₄: Community–university innovation hubs do not significantly mediate the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes.

Table 8: Regression-Based Mediation Analysis of the Mediating Role of Community–University Innovation Hubs in the Relationship between Transdisciplinary Entrepreneurial Curriculum Ecosystems and Self-Reliant Economic Outcomes

Path	β	SE	t	p
Curriculum Ecosystems $\rightarrow$ Innovation Hubs	0.671	0.053	12.66	0.000

Innovation Hubs → Self-Reliant Economic Outcomes	0.702	0.049	14.33	0.000
Indirect (Mediated) Effect	0.471	0.041	11.49	0.000

The regression-based mediation analysis examined the mediating role of community–university innovation hubs in the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes. The results showed that transdisciplinary entrepreneurial curriculum ecosystems had a significant positive relationship with community–university innovation hubs ($\beta = 0.671$, $t = 12.66$, $p = 0.000$). Similarly, community–university innovation hubs had a significant positive relationship with self-reliant economic outcomes ($\beta = 0.702$, $t = 14.33$, $p = 0.000$). The indirect (mediated) effect was also statistically significant ($\beta = 0.471$, $t = 11.49$, $p = 0.000$). Since the significance values were less than the 0.05 level of significance, the null hypothesis was rejected. This implies that community–university innovation hubs significantly mediated the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes in South East Nigeria.

Discussion of Findings

The findings of this study revealed a significant positive relationship between IK–STEM–Creative curricula and entrepreneurial self-reliance. This suggests that integrating indigenous knowledge, science, technology, engineering, mathematics, and creative industries within entrepreneurial curricula enhances learners' capacity to become self-reliant through innovation, enterprise creation, and sustainable economic participation. The finding reinforces the growing global recognition that entrepreneurship education should extend beyond conventional classroom instruction to embrace culturally relevant, interdisciplinary, and experiential learning approaches. The result is consistent with the position of UNESCO (2022), which emphasized that higher education curricula should integrate indigenous knowledge with scientific and technological innovations to prepare learners for sustainable development. Similarly, the OECD (2023) reported that entrepreneurial education built on interdisciplinary learning and innovation significantly improves graduates' entrepreneurial competencies and economic productivity. The finding also supports the World Bank (2024), which maintained that economies that encourage knowledge integration and innovation-driven entrepreneurship are more resilient and better positioned for sustainable growth. Consequently, integrating IK–STEM–Creative curricula provides an effective pathway for promoting entrepreneurial self-reliance among university graduates in South East Nigeria.

The study further established a significant positive relationship between IK-aligned STEM competencies and enterprise formation. This implies that embedding indigenous knowledge within STEM education equips learners with practical, innovative, and context-specific competencies necessary for creating sustainable enterprises. The finding supports UNESCO (2024), which advocated for educational systems that combine local knowledge with scientific and technological skills to address emerging economic and societal challenges. It also agrees with the report of the OECD (2023), which noted that entrepreneurship education integrating STEM competencies enhances innovation, productivity, and enterprise development. Furthermore, the finding aligns with Muriithi and Botha (2023), who observed that university innovation ecosystems promote entrepreneurial competence and facilitate business creation among African youths through collaborative learning and practical engagement. The implication is that strengthening IK-aligned STEM competencies within entrepreneurial curricula can stimulate enterprise formation and contribute to sustainable economic development.

The findings also showed a significant positive relationship between IK-informed creative modules and youth livelihoods. This indicates that integrating indigenous knowledge

into creative industry education equips young people with employable skills, stimulates innovation, preserves cultural heritage, and creates opportunities for sustainable income generation. The finding is consistent with UNESCO (2022), which emphasized that indigenous knowledge and cultural creativity constitute valuable educational resources for promoting inclusive development and lifelong learning. Similarly, the United Nations (2023) recognized the creative economy as an important driver of employment generation, social inclusion, and sustainable livelihoods, particularly among young people. The finding further corroborates the World Bank (2024), which highlighted the importance of creativity, innovation, and locally driven entrepreneurship in addressing youth unemployment and promoting inclusive economic growth. Therefore, integrating indigenous knowledge into creative modules has the potential to improve youth livelihoods while strengthening local economies.

Finally, the study found that community–university innovation hubs significantly mediated the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes. This finding demonstrates that effective collaboration between universities and communities provides an enabling environment through which entrepreneurial knowledge is translated into practical innovation, enterprise development, and sustainable economic outcomes. The finding supports UNESCO (2024), which advocated stronger partnerships among higher education institutions, communities, industries, and governments to accelerate knowledge transfer and sustainable development. It also agrees with Rodriguez, Fernandez, and Perez (2023), who reported that community–university collaborations strengthen entrepreneurial innovation by connecting academic knowledge with real-world societal and economic needs. Similarly, Muriithi and Botha (2023) emphasized that innovation hubs facilitate entrepreneurial learning, business incubation, and knowledge exchange, thereby enhancing enterprise creation and economic resilience. The implication is that community–university innovation hubs serve as strategic institutional platforms that strengthen the effectiveness of transdisciplinary entrepreneurial curriculum ecosystems in promoting self-reliant economic outcomes in South East Nigeria. Generally, the findings of this study demonstrate that transdisciplinary entrepreneurial curriculum ecosystems integrating indigenous knowledge, STEM, and creative industries provide a viable framework for strengthening entrepreneurial competence, enterprise formation, youth livelihoods, and self-reliant economic development. The study further underscores the critical role of community–university innovation hubs as institutional mechanisms for translating entrepreneurial knowledge into practical innovations and sustainable economic opportunities. These findings reinforce the need for universities and policymakers to adopt collaborative, context-responsive, and innovation-driven curriculum models capable of addressing graduate unemployment and advancing sustainable development in Nigeria.

Contribution to Knowledge

This study contributes to knowledge by extending the discourse on entrepreneurship education beyond conventional curriculum implementation to a transdisciplinary entrepreneurial curriculum ecosystem that integrates indigenous knowledge, STEM, and the creative industries as complementary drivers of self-reliant economic development. It provides empirical evidence that meaningful relationships exist between IK–STEM–Creative curricula and entrepreneurial self-reliance, IK-aligned STEM competencies and enterprise formation, as well as IK-informed creative modules and youth livelihoods. The study also contributes theoretically by demonstrating the mediating role of community–university innovation hubs in strengthening the relationship between transdisciplinary entrepreneurial curriculum ecosystems and self-reliant economic outcomes. Furthermore, the study presents an integrated curriculum framework that combines indigenous knowledge, scientific innovation, technological competencies, and creative enterprise within a collaborative

university–community ecosystem. The findings provide useful evidence for curriculum developers, higher education institutions, policymakers, and development agencies seeking innovative strategies for enhancing graduate employability, entrepreneurship education, and sustainable economic development in Nigeria and other developing economies.

Conclusion

Based on the findings of the study, it was concluded that transdisciplinary entrepreneurial curriculum ecosystems have significant relationships with self-reliant economic outcomes in South East Nigeria. The study established that integrating indigenous knowledge, STEM, and creative industries within entrepreneurial curricula is associated with improved entrepreneurial self-reliance, enterprise formation, and youth livelihoods. It further concluded that community–university innovation hubs play a significant mediating role by strengthening collaboration between higher education institutions and communities, thereby facilitating the translation of entrepreneurial knowledge into practical innovations and sustainable economic opportunities. The study therefore concludes that adopting transdisciplinary and community-oriented entrepreneurial curriculum ecosystems can contribute substantially to graduate self-reliance, enterprise development, and sustainable economic transformation.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Universities should redesign entrepreneurship curricula to integrate indigenous knowledge, STEM, and creative industries through transdisciplinary learning approaches that promote entrepreneurial self-reliance and sustainable economic development.
2. University management and curriculum developers should strengthen the integration of indigenous knowledge into STEM education by providing practical learning experiences that enhance innovation, enterprise formation, and problem-solving competencies among students.
3. Higher education institutions and relevant government agencies should establish and strengthen community–university innovation hubs to facilitate knowledge exchange, business incubation, technology transfer, and collaboration between universities, industries, and local communities.
4. Policymakers, educational administrators, and development partners should provide adequate funding, infrastructure, policy support, and capacity-building programmes that encourage the implementation of transdisciplinary entrepreneurial curriculum ecosystems for improving youth livelihoods, graduate employability, and self-reliant economic outcomes in Nigeria.

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