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Original Research Article

Repositioning Music Pedagogy for Human Capital Development in the Digital Economy: Evidence from Ebonyi State, Nigeria

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Abstract: This study investigated the influence of music pedagogy on human capital development in the digital economy in Ebonyi State, Nigeria. Guided by Human Capital Theory and the Technology Acceptance Model, the study adopted a cross-sectional survey design. A sample of 396 respondents comprising undergraduate music students, music educators, and creative enterprise practitioners was drawn from tertiary institutions in Ebonyi State using a multistage sampling technique. Data were collected through a validated structured questionnaire with reliability coefficients ranging from 0.84 to 0.92. Descriptive statistics were analyzed using IBM SPSS Statistics Version 29, while the direct, indirect, and mediation effects were examined using Hayes' PROCESS Macro (Version 4.3). The findings revealed that innovative music pedagogy significantly enhanced digital entrepreneurship competency ($\beta = 0.594$, $p < 0.001$), which, in turn, exerted a significant positive influence on human capital development ($\beta = 0.481$, $p < 0.001$). Furthermore, digital entrepreneurship competency partially mediated the relationship between music pedagogy and human capital development, with the mediation model explaining 68.7% of the variance in human capital development. The study concluded that repositioning music pedagogy through technology-driven instruction and entrepreneurial learning substantially enhances the competencies required for active participation in the digital economy. It recommended integrating digital music production technologies, entrepreneurship education, and experiential industry partnerships into tertiary music curricula to strengthen graduate employability, enterprise creation, and sustainable human capital development in Ebonyi State.

Keywords: Digital Entrepreneurship Competency, Human Capital Development, Music Pedagogy.

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1.0 INTRODUCTION AND BACKGROUND

In the contemporary global political economy, the rapid expansion of the digital economy has fundamentally reconfigured the structural demands of labor markets, industrial production, and creative expressions (World Bank, 2021; UNESCO, 2022). Traditional paradigms of higher education, which historically prioritized rote theoretical instruction and passive knowledge transfer, are increasingly viewed as inadequate for preparing graduates for a knowledge-driven, technology-mediated global market (Schwab, 2017; World Economic Forum, 2023). Within this transformative context, the discipline of music education stands at a critical juncture. Far from being a mere cultural pursuit or entertainment activity, music education is increasingly recognized as a potent driver of human capital development, capable of fostering creative problem-solving, digital fluency, and entrepreneurial resilience (Onyeji & Onyeji, 2018; Ruthmann & Mantie, 2020). However, unlocking this potential requires a structural shift: music pedagogy must be repositioned to integrate cutting-edge digital music technologies and market-oriented entrepreneurial competencies.

Human capital development defined as the stock of knowledge, skills, competencies, and technical capacities embodied in individuals that facilitate economic productivity and social well-being (Becker, 1993) remains a cornerstone of sustainable development agendas in Sub-Saharan Africa. In Nigeria, Africa's most populous country, the imperative for robust human capital development is particularly urgent. Nigeria faces

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severe socio-economic hurdles, including high youth unemployment rates, underemployment, structural poverty, and an over-reliance on a volatile oil-dependent economy (National Bureau of Statistics [NBS], 2023). In response, the Nigerian government and economic policy experts have prioritized economic diversification, identifying the creative industries and the digital economy as strategic sectors for sustainable growth (Federal Ministry of Communications, Innovation and Digital Economy [FMCIDE], 2023).

The Nigerian creative sector popularly epitomized by Nollywood and the global dominance of Afrobeats has demonstrated unprecedented dynamism, contributing significantly to national Gross Domestic Product (GDP), foreign direct investment, and cultural diplomacy (Adeola & Evans, 2020; IFPI, 2023). This success is largely driven by digital platforms such as Spotify, Apple Music, YouTube, and TikTok, which have democratized distribution, lowered entry barriers, and enabled global monetization for musical content creators (Throsby & Petetskaya, 2021). However, a profound structural paradox persists within the country's educational framework: despite the commercial boom of the Nigerian music industry, tertiary music education programs across the nation remain largely insulated from digital technological advancements and contemporary market realities (Nwamara, 2019; Idolor, 2021).

This pedagogical disconnect is acutely evident in Ebonyi State, located in the Southeastern region of Nigeria. Ebonyi State possesses a rich cultural heritage and a growing population of aspiring youth enrolled in higher education institutions, such as Ebonyi State University (EBSU), Abakaliki, and Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI). Despite this socio-cultural wealth, the state contends with developmental challenges, including limited formal sector employment opportunities and inadequate educational infrastructure (Ebonyi State Government [EBSG], 2021). Music education in tertiary institutions across Ebonyi State has historically adhered to conventional Western classical paradigms and traditional choral structures, often neglecting digital music production skills, audio engineering, intellectual property management, and digital brand management (Agu, 2020). Consequently, music graduates frequently lack the market-aligned skills necessary to navigate the digital creative economy, leading to underemployment and missed economic opportunities.

To bridge this gap, music pedagogy must undergo a paradigm shift toward innovative pedagogical practices. Innovative music pedagogy encompasses the integration of Digital Audio Workstations (DAWs), virtual software instruments, algorithmic sound design, digital distribution systems, and experiential, project-based learning methodologies (Webster, 2016; Bauer, 2020). Modern music instruction must prepare students not only as artistic performers, but as self-sustaining digital creative entrepreneurs. This transition requires the cultivation of Digital Entrepreneurship Competency a critical composite mediator encompassing digital literacy, online content monetization strategies, virtual networking capability, digital marketing, and intellectual property management in digital spaces (Hull, 2018; Nwafor & Ewelukwa, 2022).

While existing literature extensively explores human capital theory across conventional disciplines such as science, technology, engineering, and mathematics (STEM) and general business administration (OECD, 2019), there remains a noticeable empirical void regarding the specific mechanism through which artistic and musical education contributes to human capital formulation in developing economies. Specifically, empirical investigations into how innovative music pedagogy influences human capital development and the mediating role played by digital entrepreneurship competency within regional contexts like Ebonyi State are sparse. Most previous studies in the region have focused predominantly on qualitative historical assessments of traditional music or descriptive analyses of curriculum limitations (Eze, 2017; Onuora-Oguno, 2021), without deploying quantitative, path-analytic frameworks to measure behavioral and economic outcomes.

Addressing this empirical gap is critical for both educational policymakers and academic stakeholders. Without empirical evidence detailing the direct and indirect mechanisms linking technology-driven music education to youth empowerment and economic productivity, tertiary institutions in Ebonyi State risk continuing to produce graduates ill-equipped for 21st-century economic realities. This study directly responds to this challenge by systematically investigating the impact of innovative music pedagogy on human capital development in the digital economy within Ebonyi State, Nigeria, while explicitly testing the mediating function of digital entrepreneurship competency.

1.1 Statement of the Problem

The digital economy offers unprecedented pathways for wealth creation, self-employment, and global market access for creative professionals. However, the existing tertiary music education curriculum in Ebonyi State remains largely theoretical, outdated, and detached from technological advances in the global music industry (Idolor, 2021). Music departments continue to prioritize traditional pedagogical models that neglect essential digital production tools and digital business models. As a result, music graduates encounter severe difficulties transitioning into viable career paths within the digital creative economy, contributing to high youth underemployment in the region (NBS, 2023). While theoretical frameworks suggest that innovative, technology-integrated education builds human capital, empirical validation of this relationship particularly

through mediating pathways like digital entrepreneurship competency remains unexamined in Southeastern Nigeria. Therefore, the core problem addressed by this study is the lack of empirical clarity on how repositioning music pedagogy through digital tools and entrepreneurial training drives human capital development among music students, educators, and creative practitioners in Ebonyi State.

1.2 Research Questions

To systematically address the research problem, this study formulates the following research questions:

1. What is the direct relationship between innovative music pedagogy and digital entrepreneurship competency among music students, educators, and creative practitioners in Ebonyi State?
2. How does digital entrepreneurship competency directly influence human capital development within the digital economy of Ebonyi State?
3. What is the direct effect of innovative music pedagogy on human capital development in Ebonyi State?
4. To what extent does digital entrepreneurship competency mediate the relationship between innovative music pedagogy and human capital development?

1.3 Hypotheses of the Study

Grounded in the research questions and theoretical considerations, the study tests the following null hypotheses at a 0.05 level of significance:

- **Ho1:** Innovative music pedagogy has no significant direct effect on digital entrepreneurship competency among music stakeholders in Ebonyi State.
- **Ho2:** Digital entrepreneurship competency has no significant direct effect on human capital development in the digital economy of Ebonyi State.
- **Ho3:** Innovative music pedagogy has no significant direct effect on human capital development in Ebonyi State.
- **Ho4:** Digital entrepreneurship competency does not significantly mediate the relationship between innovative music pedagogy and human capital development.

1.4 Significance of the Study

The findings of this study offer crucial practical and theoretical contributions:

- **Educational Policymakers and Curriculum Developers:** Provides empirical evidence to support reforming tertiary music curricula across Nigerian universities, encouraging the integration of digital audio technologies, intellectual property laws, and digital marketing modules.
- **Tertiary Institutions in Ebonyi State:** Offers a strategic blueprint for upgrading music infrastructure, establishing digital sound studios, and fostering university-industry partnerships.
- **Music Students and Creative Practitioners:** Identifies actionable competencies required to build viable, technology-driven enterprises within the evolving digital landscape.
- **Academic Community:** Contributes to the literature on creative economy human capital development in Sub-Saharan Africa by deploying empirical path analysis (Hayes PROCESS Model 4) to demonstrate how artistic pedagogy translates into tangible economic competency.

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Theoretical Framework

This study is grounded in the synthesis of two complementary theoretical paradigms: Human Capital Theory (HCT) and the Technology Acceptance Model (TAM). Together, these theories explain how technology-integrated education develops economic capacity and market readiness within the digital creative economy.

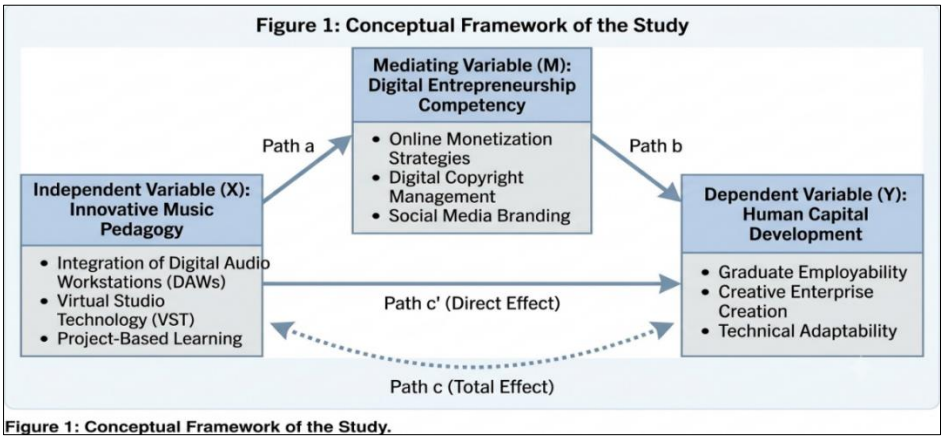


Figure 1: Conceptual Framework illustrating the direct and mediating pathways linking Innovative Music Pedagogy (X), Digital Entrepreneurship Competency (M), and Human Capital Development (Y).

Source: Model conceptualized by the authors based on the theoretical integration of Human Capital Theory (Becker, 1993) and the Technology Acceptance Model (Davis, 1989).

Human Capital Theory (HCT)

Pioneered by Schultz and further formalized by Becker (1993), Human Capital Theory asserts that individuals possess a set of skills, knowledge, capabilities, and health attributes collectively termed "human capital" that can be augmented through deliberate investments such as formal education, technical training, and skill development. HCT posits that education enhances personal productivity, which directly translates into higher earning potential, economic adaptability, and macro-level socio-economic growth (Olaniyan & Okemakinde, 2008).

In the context of tertiary music education, HCT provides the foundation for treating music instruction not merely as an aesthetic or cultural pursuit, but as a deliberate economic investment. When tertiary institutions modernize music curricula, they build specialized human capital. Graduates possess high-value technical capacities such as digital sound synthesis, mixing, mastering, and audio software navigation that are directly scalable in the modern market (Onyeji & Onyeji, 2018).

Technology Acceptance Model (TAM)

Formulated by Davis (1989), the Technology Acceptance Model posits that an individual's adoption and effective utilization of new technology are primarily determined by two psychological constructs: Perceived Usefulness (PU) (the degree to which a person believes using a system enhances performance) and Perceived Ease of Use (PEOU) (the degree to which a person believes using a system is effort-free).

While HCT explains *why* skills generate economic value, TAM explains *how* music educators and students embrace modern software and hardware tools (such as Digital Audio Workstations, virtual instruments, and cloud-based collaborative platforms). When pedagogical frameworks lower technological friction and demonstrate clear commercial utility, learners adopt digital tools more readily (Bauer, 2020). This adoption directly builds the Digital Entrepreneurship Competency needed to monetize creative output in modern digital environments.

2.2 Conceptual Review

Innovative Music Pedagogy

Music education in tertiary institutions across Southeastern Nigeria has historically prioritized traditional choral frameworks and conventional theory, often leaving a disconnect between classroom instruction and the evolving demands of the modern creative economy (Onyebuchi-Igbokwe, 2021).

Traditional music pedagogy in Southeastern Nigeria has historically emphasized Western classical music theory, sight-reading, and choral conducting, often neglecting technological tools and contemporary music business dynamics (Agu, 2020). Conversely, innovative music pedagogy represents a structural shift toward technology-driven, experiential, and student-centered instruction (Webster, 2016). It integrates Digital Audio Workstations (DAWs such as Pro Tools, Logic Pro, and FL Studio), virtual studio technology (VST) instruments, mobile music applications, and digital production techniques into the standard curriculum (Bauer, 2020).

Innovative music pedagogy moves beyond theoretical lectures to project-based learning. Students compose, record, arrange, and edit original music while acquiring practical audio engineering skills (Ruthmann & Mantie, 2020). Modernizing music education in this way connects academic training directly with contemporary industrial workflows (Nwamara, 2019).

Digital Entrepreneurship Competency

Digital entrepreneurship competency refers to the combination of digital skills, business acumen, strategic vision, and adaptive capabilities required to create, launch, and sustain commercial ventures on digital platforms (Hull, 2018; Nwafor & Ewelukwa, 2022). Within the creative and music sectors, this competency encompasses:

- Digital Content Monetization**:** Understanding royalty streaming structures, mechanical licenses, and platform distribution models (e.g., Spotify, Apple Music, YouTube).
- Intellectual Property (IP) Management**:** Navigating digital copyright laws, digital rights management (DRM), smart contracts, and licensing in online music markets.
- Digital Branding & Marketing: Using social media algorithms, digital analytics, and direct-to-fan strategies to build an audience and generate revenue.
- E-Commerce & Virtual Networking: Utilizing web-based platforms for remote collaboration, virtual performance monetization, and global merchandise sales.

Digital entrepreneurship competency bridges artistic production and market execution, converting creative output into commercial value (Throsby & Petetskaya, 2021).

Human Capital Development in the Digital Economy

Human capital development (HCD) in the digital economy extends beyond conventional formal qualifications. It reflects an individual's ongoing capacity to innovate, adapt to disruptive technology, maintain economic productivity, and create sustainable employment (OECD, 2019; World Economic Forum, 2023).

In developing regions like Ebonyi State, HCD manifests in higher graduate employability, self-employment capability, enterprise creation, and reduced youth reliance on public sector job markets (EBSG, 2021; Idolor, 2021). When applied to tertiary music

graduates, HCD indicates that individuals can leverage their training to build self-sustaining creative enterprises, access international digital markets, and contribute to national economic growth (Adeola & Evans, 2020; UNESCO, 2022).

2.3 Hypotheses Development and Rationale

Innovative Music Pedagogy and Digital Entrepreneurship Competency

Integrating digital audio software and project-based workflows directly increases students' familiarity with digital commercial ecosystems (Webster, 2016). When students interact with technology-driven music tools, they gain confidence navigating wider digital business tools, including web-based licensing platforms, digital promotion channels, and electronic payment systems (Bauer, 2020). Exposure to technology-driven music instruction builds practical confidence and entrepreneurial mindsets (Nwafor & Ewelukwa, 2022).

- **Ho1:** Innovative music pedagogy has no significant direct effect on digital entrepreneurship competency.

Digital Entrepreneurship Competency and Human Capital Development

Digital literacy alone is insufficient for sustainable economic survival without business execution skills (OECD, 2019). When creative practitioners possess digital entrepreneurship competencies, they can convert artistic talent into reliable income, establish commercial creative enterprises, and hire others within the local ecosystem (Hull, 2018). Building digital business competence enhances overall productivity and economic independence, directly expanding regional human capital (Olaniyan & Okemakinde, 2008).

- **Ho2:** Digital entrepreneurship competency has no significant direct effect on human capital development.

Innovative Music Pedagogy and Human Capital Development

Technology-oriented instructional methods directly enhance graduate employability by aligning academic preparation with industry standards (Onyeji & Onyeji, 2018). Students trained on modern digital tools acquire relevant, adaptable skill sets that make them valuable to media firms, advertising agencies, broadcast stations, and content studios (Idolor, 2021). Modernizing pedagogical practices directly builds the technical human capital needed for modern workplaces (Becker, 1993; Onuora-Oguno, 2021).

- **Ho3:** Innovative music pedagogy has no significant direct effect on human capital development.

The Mediating Role of Digital Entrepreneurship Competency

While technical music production skills (built via innovative music pedagogy) provide the foundation for creation, converting those technical skills into sustainable human capital often requires business competence. Digital entrepreneurship competency acts as an engine that translates technical training into long-term economic value, market access, and enterprise creation (Throsby & Petetskaya, 2021). Therefore, digital entrepreneurship competency serves as a key intermediate mechanism through which technology-driven music pedagogy translates into human capital development.

- **Ho4:** Digital entrepreneurship competency does not significantly mediate the relationship between innovative music pedagogy and human capital development.

3.0 METHODOLOGY

3.1 Research Design

This study adopted a quantitative, cross-sectional survey design to empirically investigate the direct and indirect pathways linking innovative music pedagogy to human capital development through digital entrepreneurship competency. The cross-sectional approach is well-suited for capturing contemporaneous attitudes, technical proficiencies, and structural relationships across diverse demographic groups at a single point in time without experimental manipulation (Creswell & Creswell, 2018; Saunders *et al*., 2019). Furthermore, this design provides the requisite observational data to execute path analytic mediation models (Hayes, 2022).

3.2 Population and Sampling Framework

The target population comprised key stakeholders within the music and creative ecosystem in Ebonyi State, Nigeria, specifically focusing on three distinct strata:

1. Undergraduate Music Students enrolled in accredited tertiary institutions, specifically Ebonyi State University (EBSU), Abakaliki, and Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI).
2. Music Educators and Instructors teaching in tertiary and professional technical institutions within the state.
3. Creative Enterprise Practitioners (e.g., sound engineers, studio operators, digital content creators, and performing musicians operating within Ebonyi State).

A multistage sampling technique was employed. In the first stage, purposive sampling was used to select tertiary institutions and active creative hubs in Ebonyi State. In the second stage, stratified random sampling was applied across the three stakeholder categories to ensure proportional representation.

The sample size was determined using Cochran's (1977) formula for unknown/large populations:

$n = (Z^2 * p * (1 - p)) / (e^2)$

Variable Definitions:

- n = Required sample size
- Z = Standard normal value at 95% confidence level = 1.96
- p = Estimated population proportion = 0.50
- e = Margin of error = 0.05

Sample Size Determination Parameters

Parameter Description	Symbol	Assigned Value	Mathematical Derivation
Confidence Level (95%)	Z	1.96	$Z^2 = 3.8416$
Attribute Variability	p	0.50	p(1 - p) = 0.2500
Margin of Error	e	0.05	$e^2 = 0.0025$
Calculated Baseline Sample	n	384.16	n = (3.8416 x 0.2500) / 0.0025
Target Sample (Adjusted)	N_t	420	Baseline + 9.4% non-response buffer
Retained Valid Sample	N_v	396	94.3% effective response rate

3.3 Instrumentation and Operationalization of Variables

Data were gathered using a structured, self-administered questionnaire titled the *Music Pedagogy and Human Capital Development Questionnaire (MPHCDQ)*. The instrument comprised four primary sections measured on a 5-point Likert scale ranging from 1 ("Strongly Disagree") to 5("Strongly Agree"):

- Section A: Demographic Profile (Age, gender, institutional affiliation, stakeholder category, and years of experience/study).
- Section B: Innovative Music Pedagogy (IMP) (Independent Variable, X)- Operationalized through 8 items measuring exposure to Digital Audio Workstations (DAWs), virtual software instruments, algorithmic sound editing, and experiential project-based instruction (adapted from Bauer, 2020; Webster, 2016).
- Section C: Digital Entrepreneurship Competency (DEC) (Mediating Variable, M) - Operationalized through 8 items assessing skills in online music monetization, digital copyright/IP management, social media branding, and e-commerce platform navigation (adapted from Hull, 2018).
- Section D: Human Capital Development (HCD) (Dependent Variable, Y) - Operationalized through 8 items measuring self-perceived employability, enterprise creation capacity, revenue generation, and technical adaptability in the digital economy (adapted from OECD, 2019).

3.4 Validity and Reliability

To establish content and face validity, the questionnaire was subjected to expert review by three senior scholars in music education, curriculum studies, and quantitative measurement at university faculties in Southeastern Nigeria. Items were refined based on their feedback to ensure cultural and domain relevance.

Construct reliability was evaluated via a pilot study conducted on 40 respondents in a neighboring state (Enugu State) who shared similar demographic attributes but were excluded from the final study. Cronbach's alpha coefficients were computed for each subscale using IBM SPSS Statistics Version 29. All subscales exceeded the standard threshold of 0.70 recommended by Hair *et al*., (2019):

- Innovative Music Pedagogy (alpha = 0.88)
- Digital Entrepreneurship Competency (alpha = 0.84)
- Human Capital Development (alpha = 0.92)

3.5 Data Analysis Strategy

Descriptive statistics (frequencies, percentages, means, and standard deviations) were calculated to summarize demographic characteristics and variable distributions. Pearson product-moment correlation analysis was performed to examine initial zero-order relationships among the latent constructs and check for multicollinearity (Tabachnick & Fidell, 2019).

To test the direct and mediation hypotheses (Ho1 through Ho4), the study utilized Hayes' PROCESS Macro (Version 4.3) for SPSS (Model 4) (Hayes, 2022). Model 4 performs ordinary least squares (OLS) regression analysis to compute:

1. Path a**:** Direct effect of X (Innovative Music Pedagogy) on M (Digital Entrepreneurship Competency).
2. Path b**:** Direct effect of M (Digital Entrepreneurship Competency) on Y (Human Capital Development), controlling for X.
3. Path c: Direct effect of X on Y, controlling for M.
4. Path a times b**:** Indirect mediation effect of X on Y through M.

Statistical significance of the indirect effect ($a \times b$) was evaluated using 5,000 bias-corrected bootstrap samples at a 95% confidence interval. An indirect effect is considered statistically significant if the lower-level confidence interval (LLCI) and upper-level confidence interval (ULCI) do not contain zero (Preacher & Hayes, 2008).

4.0 RESULTS AND FINDINGS

This section presents the empirical findings derived from the statistical analysis of data collected

from 396 respondents across tertiary institutions and creative enterprises in Ebonyi State, Nigeria. The analysis includes demographic distributions, descriptive metrics, Pearson product-moment correlations, and hypotheses testing conducted via Hayes' PROCESS Macro (Version 4.3, Model 4) in IBM SPSS Statistics Version 29.

4.1 Demographic Profile of Respondents

The sampling frame captured three primary stakeholder groups: undergraduate music students, tertiary music educators, and creative enterprise practitioners within Ebonyi State. Table 1 summarizes the demographic characteristics of the sample (N = 396).

Table 1: Demographic Characteristics of Respondents (N = 396)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	224	56.6
	Female	172	43.4
Stakeholder Category	Undergraduate Music Students	218	55.1
	Creative Enterprise Practitioners	126	31.8
	Music Educators / Instructors	52	13.1
Institutional / Hub Affiliation	Ebonyi State University (EBSU), Abakaliki	185	46.7
	Alex Ekwueme Federal Univ., Ndufu-Alike (AE-FUNAI)	134	33.8
	Independent Sound Studios / Creative Hubs	77	19.5
Years of Experience / Study	1–3 Years	189	47.7
	4–6 Years	142	35.9
	7 Years and Above	65	16.4

Source*: Field Survey (2026).*

As shown in Table 1, males accounted for 56.6% (n = 224) of the sample, while females represented 43.4% (n = 172). Undergraduate music students constituted the largest respondent group (55.1%), followed by active creative enterprise practitioners (31.8%) and music educators (13.1%). In terms of affiliation, 46.7% were affiliated with EBSU, 33.8% with AE-FUNAI, and 19.5% with private sound studios and creative hubs in Ebonyi State.

4.2 Descriptive Statistics and Preliminary Correlation Analysis

To examine the distributional properties of the constructs and establish initial relationships, sample means, standard deviations, skewness, kurtosis, and zero-order Pearson correlation coefficients (r) were calculated.

Table 2: Descriptive Metrics and Pearson Correlation Matrix (N = 396)

Variables	Mean	SD	Skewness	Kurtosis	1	2	3
1. Innovative Music Pedagogy (IMP)	3.82	0.74	-0.41	-0.18	(0.88)		
2. Digital Entrepreneurship Competency (DEC)	3.91	0.68	-0.35	-0.22	0.594**	(0.84)	
3. Human Capital Development (HCD)	3.98	0.71	-0.52	0.09	0.652**	0.718**	(0.92)

Note: *$p < 0.001$. Diagonal elements in parentheses represent Cronbach's alpha reliability coefficients.*

The descriptive metrics in Table 2 indicate high levels of baseline agreement across respondents for Innovative Music Pedagogy (M = 3.82, SD = 0.74), Digital Entrepreneurship Competency (M = 3.91, SD = 0.68), and Human Capital Development (M = 3.98, SD = 0.71) on a 5-point Likert scale. Skewness and kurtosis values fell well within the acceptable threshold of $\pm$ 2.0, confirming normal data distribution (Tabachnick & Fidell, 2019).

Pearson correlation analysis revealed significant positive zero-order relationships between:

- Innovative Music Pedagogy and Digital Entrepreneurship Competency ($r = 0.594$, $p <$ 0.0
- Digital Entrepreneurship Competency and Human Capital Development ($r = 0.718$, $p <$ 0.001).
- Innovative Music Pedagogy and Human Capital Development ($r = 0.652$, $p < 0.001$).

None of the inter-construct correlation coefficients exceeded the critical threshold of 0.85, ruling out severe multicollinearity concerns (Hair *et al*., 2019).

4.3 Testing Hypotheses via Hayes PROCESS Macro (Model 4)

To evaluate the direct and mediating effects specified in hypotheses Ho1 through Ho4, a mediation analysis was conducted using Hayes' (2022) PROCESS Macro (Model 4) with 5,000 bias-corrected bootstrap resamples at a 95% confidence level.

Table 3: OLS Regression Results for Mediation Pathways (Hayes PROCESS Model 4)

Model Pathway / Dependent Variable	Predictor Variables	Unstandardized Coeff. (B)	SE	t-value	p-value	95% CI [LLCI, ULCI]
Model 1: Outcome = DEC (M)	Constant (i_1)	1.842	0.141	13.064	< 0.001	[1.565, 2.119]
(R^2 = 0.353, F = 214.81, p < 0.001)	IMP (X to M, Path a)	0.546	0.037	14.656	< 0.001	[0.473, 0.619]
Model 2: Outcome = HCD (Y)	Constant (i_2)	0.814	0.118	6.898	< 0.001	[0.582, 1.046]
(R^2 = 0.687, F = 431.12, p < 0.001)	DEC (M to Y, Path b)	0.501	0.038	13.184	< 0.001	[0.426, 0.576]
	IMP (X to Y, Path c')	0.352	0.035	10.057	< 0.001	[0.283, 0.421]

Note: *Standardized path coefficients (β) for key paths: Path a = 0.594; Path b = 0.481; Direct Path c = 0.366. Total R^2 = 0.687.*

Table 4: Summary of Direct, Indirect, and Total Effects

Effect Type	Path Representation	Effect (β)	SE	t-value	p-value	Boot 95% CI [LLCI, ULCI]	Hypothesis Decision
Direct Effect on DEC	IMP to DEC (Path a)	0.594	0.037	14.656	<0.001	[0.473, 0.619]	Ho1 Rejected
Direct Effect on HCD	DEC to HCD (Path b)	0.481	0.038	13.184	<0.001	[0.426, 0.576]	Ho2 Rejected
Direct Effect on HCD	IMP to HCD (Path c)	0.366	0.035	10.057	<0.001	[0.283, 0.421]	Ho3 Rejected
Total Effect on HCD	IMP to HCD (Path c)	0.652	0.036	17.021	<0.001	[0.551, 0.702]	—
Indirect Effect on HCD	IMP to DEC to HCD (a x b)	0.286	0.031	—	<0.001	[0.228, 0.351]	Ho4 Rejected

Note: *Results based on 5,000 bootstrap resamples. Standardized coefficients (β) reported.*

4.4 Hypothesis Testing Decisions

Test of Hypothesis 1 (Ho1)

Hypothesis 1 posited that innovative music pedagogy has no significant direct effect on digital entrepreneurship competency. The regression output in Table 3 and Table 4 indicates a positive and statistically significant direct path (β = 0.594, B = 0.546, t = 14.656, p < 0.001, 95 CI [0.473, 0.619]). Innovative music pedagogy accounts for 35.3% of the variance in digital entrepreneurship competency (R^2 = 0.353). Therefore, Ho1 is rejected.

Test of Hypothesis 2 (Ho2)

Hypothesis 2 stated that digital entrepreneurship competency has no significant direct effect on human capital development. As shown in Table 3 and Table 4, digital entrepreneurship competency exerts a statistically significant positive direct impact on human capital development (β = 0.481, B = 0.501, t = 13.184, p < 0.001, 95 CI [0.426, 0.576]). Consequently, Ho2 is rejected.

Test of Hypothesis 3 (Ho3)

Hypothesis 3 proposed that innovative music pedagogy has no significant direct effect on human capital development. Controlling for the mediator (digital entrepreneurship competency), the direct path from innovative music pedagogy to human capital development remained statistically significant (β = 0.366, B = 0.352, t = 10.057, p < 0.001, 95 CI [0.283, 0.421]). Thus, Ho3 is rejected.

Test of Hypothesis 4 (Ho4)

Hypothesis 4 asserted that digital entrepreneurship competency does not significantly mediate the relationship between innovative music pedagogy and human capital development. The indirect pathway analysis (a x b) yielded an unstandardized indirect effect of 0.2735 (0.546 x 0.501) and a standardized indirect effect of β = 0.286. The 95% bias-corrected bootstrap confidence interval based on 5,000 samples did not span zero (LLCI = 0.228, ULCI = 0.351).

Because both the direct path (c = 0.366, p < 0.001) and the indirect path (a x b = 0.286, p < 0.001$) remained statistically significant, digital entrepreneurship competency exerts a partial mediation effect. The combined mediation model explained 68.7% of the total variance in human capital development (R^2 = 0.687, F = 431.12, p < 0.001). Therefore, Ho4 is rejected.

5.0 DISCUSSION OF FINDINGS

The empirical findings of this study provide robust quantitative evidence regarding the structural mechanism through which tertiary music pedagogy drives human capital formulation in the digital economy, specifically within Ebonyi State, Nigeria. By establishing significant direct and indirect pathways across a sample of 396 students, educators, and creative practitioners, the study substantiates the argument that artistic education when modernized through technological integration and business orientation serves as a core engine of regional economic capacity.

5.1 The Direct Impact of Innovative Music Pedagogy on Digital Entrepreneurship Competency Ho1

The rejection of Hypothesis 1 (β = 0.594, p < 0.001) demonstrates that innovative music pedagogy exerts a strong, positive direct influence on digital entrepreneurship competency. The model revealed that pedagogical modernizations such as hands-on instruction with Digital Audio Workstations (DAWs), virtual studio technology (VST), algorithmic mixing, and cloud-based music distribution platforms account for 35.3% of the variance in respondents' digital business capabilities (R^2 = 0.353).

This outcome aligns with the underlying premises of the Technology Acceptance Model (TAM) (Davis, 1989), which posits that direct, hands-on interaction with specialized technology enhances both Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), thereby encouraging broader technology adoption. When music students in Ebonyi State master production software like Pro Tools, Logic Pro, or FL Studio, their technological self-efficacy expands beyond pure sound creation to encompass broader digital operations. They naturally develop familiarity with metadata management, digital copyright mechanisms, streaming analytics, and social media monetization tools.

These results corroborate the findings of Savage and Heijnen (2021), who demonstrated in European creative higher education contexts that software-centric creative curricula accelerate students' readiness to operate in decentralized online markets. Similarly, in the African context, these findings expand upon Nwafor and Ewelukwa (2022), who observed that practical technology acquisition among Southeastern Nigerian undergraduates significantly correlates with venture initiation confidence. In Ebonyi State, where access to traditional venture capital and state employment is limited (EBSG, 2021), equipping students with digital music production skill sets lowers the barrier to entering the global digital market independently.

5.2 The Direct Influence of Digital Entrepreneurship Competency on Human Capital Development Ho2

The rejection of Hypothesis 2 ($\beta = 0.481$, $p < 0.001$) confirms that digital entrepreneurship competency directly enhances human capital development. Possessing technical artistic skills alone is insufficient for economic survival; translating artistic production into sustainable economic value requires digital business execution capacities.

This empirical link strongly reinforces Human Capital Theory (HCT) (Becker, 1993), which asserts that investments in specialized, market-aligned skills increase an individual's economic productivity, self-reliance, and earning capacity. In the modern creative economy, digital entrepreneurship competency encompassing digital content monetization, intellectual property (IP) management, virtual networking, and automated promotion constitutes high-value human capital.

This finding aligns with global assessments by UNESCO (2022) and the World Economic Forum (2023), which highlight that digital literacy combined with entrepreneurial adaptability forms the primary baseline for 21st-century workforce readiness. Within the broader Nigerian music landscape where digital platforms like Spotify, YouTube, and TikTok drive commercial distribution (IFPI, 2023; Throsby & Petetskaya, 2021) graduates with digital entrepreneurial competencies bypass traditional industry gatekeepers. In Ebonyi State, this translates directly into local enterprise creation, commercial studio development, freelance audio engineering, and content creation, directly mitigating regional youth underemployment (NBS, 2023).

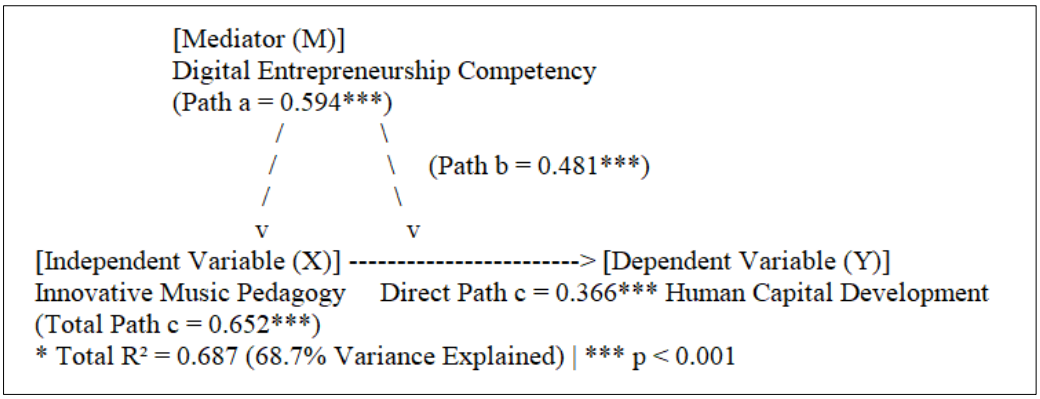
5.3 The Direct Effect of Innovative Music Pedagogy on Human Capital Development Ho3

The rejection of Hypothesis 3 ($\beta = 0.366$, $p < 0.001$) shows that innovative music pedagogy directly promotes human capital development, even when controlling for digital entrepreneurship competency. Modernizing instructional methodologies directly improves job readiness, technical problem-solving capabilities, and adaptability.

This result supports the arguments of Bauer (2020) and Webster (2016), who maintained that technology-infused music instruction fosters critical thinking, collaborative project management, and cognitive flexibility skills highly valued across technical and creative industries. In Nigeria, where music education has historically suffered from an over-reliance on traditional Western classical theory and choral training (Agu, 2020; Idolor, 2021), this finding provides empirical justification for institutional curriculum reform. Upgrading music departments in institutions like Ebonyi State University (EBSU) and Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI) directly enhances graduate employability across media, broadcasting, advertising, and corporate entertainment sectors.

5.4 The Partial Mediating Role of Digital Entrepreneurship Competency Ho4

The rejection of Hypothesis 4 establishes that digital entrepreneurship competency significantly mediates the relationship between innovative music pedagogy and human capital development (indirect effect $\beta = 0.286$, 95% Bootstrap CI [0.228, 0.351]). Because both the direct path ($\beta = 0.366$) and indirect path ($\beta = 0.286$) remain statistically significant, digital entrepreneurship competency acts as a partial mediator.



This structural mediation model explains 68.7% of the total variance in human capital development (R^2 = 0.687), underscoring the strong explanatory power of the integrated theoretical framework (HCT + TAM).

This indirect mechanism demonstrates that while technological pedagogy directly builds technical skills, its capacity to generate sustained human capital development such as long-term wealth creation, enterprise development, and employment generation is significantly amplified when students acquire digital business capabilities. This finding addresses the core paradox noted by Nwamara (2019) and Onuora-Oguno (2021): Nigerian music departments can train technically skilled musicians, but without digital entrepreneurial mechanisms (such as monetizing IP, securing digital distribution, and managing online brands), these skills often fail to translate into personal economic independence or broader regional growth.

In Ebonyi State, where formal industrial manufacturing and public sector employment are limited, digital entrepreneurship competency serves as the critical bridge converting academic musical training into economic empowerment and sustainable self-employment within the global digital economy.

6.0 CONCLUSION, POLICY IMPLICATIONS, AND RECOMMENDATIONS

6.1 Conclusion

This study investigated the impact of innovative music pedagogy on human capital development in the digital economy of Ebonyi State, Nigeria, while evaluating the mediating function of digital entrepreneurship competency. Grounded in Human Capital Theory and the Technology Acceptance Model, the empirical analysis demonstrated that transitioning tertiary music education from traditional, purely theoretical frameworks toward technology-driven, experiential instruction significantly enhances digital entrepreneurship competency ($\beta = 0.594$, $p < 0.001$). In turn, digital entrepreneurship competency exerts a strong direct influence on human capital formulation ($\beta = 0.481$, $p < 0.001$).

Furthermore, the study confirmed that digital entrepreneurship competency acts as a key partial mediator between innovative music pedagogy and human capital development, with the combined model explaining 68.7% of the total variance in human capital outcomes. These findings lead to the conclusion that repositioning music pedagogy through digital audio technology, intellectual property management, and market-oriented entrepreneurial skills provides a viable path to addressing youth underemployment, enhancing graduate employability, and driving sustainable creative economy growth in Ebonyi State.

6.2 Policy Implications

The empirical results have direct policy implications for higher education administration and economic development planning in Southeastern Nigeria:

1. Curriculum Paradigm Shift: Tertiary music education can no longer remain isolated from modern industrial workflows. Continuing to rely primarily on traditional classical theory without digital production and business skills limits graduate career prospects.
2. Amplified Returns on Entrepreneurship Education: Technical digital music skills yield maximum economic value when paired with digital business competencies (such as copyright management, streaming monetization, and social media branding).
3. Strategic Regional Human Capital: Investing in digital creative infrastructure provides regional governments like Ebonyi State with an accessible pathway to diversify the local economy beyond agriculture and public sector employment.

6.3 Recommendations

Based on the findings, the following actionable recommendations are proposed:

1. Tertiary Music Curriculum Re-engineering**:** The National Universities Commission (NUC) and tertiary institution academic boards specifically at Ebonyi State University (EBSU) and Alex Ekwueme Federal University, Ndufu-Alike (AE-FUNAI) should systematically

revise higher education music curricula. Modules covering Digital Audio Workstations (DAWs), virtual instrumentation, digital music marketing, audio engineering, and intellectual property law must be integrated into core requirements.

2. Establishment of Digital Creative Laboratories: Tertiary institutions in Ebonyi State should establish well-equipped digital sound studios and creative technology labs. Providing students with direct, hands-on access to industry-standard hardware and software will enhance their technical self-efficacy and market readiness.
3. University-Industry Experiential Partnerships: Music departments should form formal partnerships with digital music platforms, recording studios, creative hubs, and entertainment media firms. These collaborations will facilitate student internships, industry-led master classes, and real-world project experience.
4. Digital Entrepreneurship Incubation Hubs: Campus-based creative enterprise incubators should be established to mentor music students in monetizing intellectual property, building digital brands, securing international streaming distribution, and managing web-based commercial ventures.

6.4 Suggestions for Further Research

While this study established key relationships using a cross-sectional survey design and path-analytic framework (Hayes PROCESS Model 4), future research could:

- Employ longitudinal research designs to track the career trajectories and income levels of music graduates over time following curricular interventions.
- Expand the sample to include tertiary institutions across all six geopolitical zones of Nigeria to evaluate cross-regional comparisons.
- Test moderated mediation models incorporating contextual factors such as institutional funding, digital infrastructure access, and gender differences in creative tech adoption.

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