

## Emerging issues in the sustainability of the Igbo apprenticeship system in south east Nigeria

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### Abstract

Igbo Apprenticeship System (IAS) evolved out of the "Igba-Odibo" tradition, is globally acclaimed to be a better traditional system of entrepreneurship, redistributive wealth mechanism, process of empowerment, and process of social integration. It has, in the past, provided economic empowerment, transfer of skills, and coping capacity at the community level. Its sustainability is threatened by globalization, digital revolution, cultural change, and institutional weakness. The research evaluated the extent of human capital development in Abia, Anambra, and Enugu States on the basis of the discovery of 360 parents, masters, and apprentices on globalization and institutional uncertainty. Binomial tests of proportion through Z-approximation showed that IAS had a significant role in entrepreneurship at 82% agreement ( $Z = 15.27$ ,  $p=0.82$ ,  $p < .01$ ); business prosperity was linked to IAS at 68% agreement ( $Z = 10.54$ ,  $p=0.68$ ,  $p < .01$ ); 76% agreed about the application of IAS in keeping companies in business ( $Z = 12.83$ ,  $p=0.76$ ,  $p < .01$ ); 80% testified to its enforcement of self-sufficiency ( $Z = 14.96$ ,  $p=0.80$ ,  $p < .01$ ); and 75% testified that IAS enabled control over joblessness ( $Z = 13.42$ ,  $p=0.75$ ,  $p < .01$ ). Collectively, they validate IAS as a viable local labor and entrepreneurial model, placed in human capital theory and literature but also corroborating shortages of modernization, youth involvement, and policy acknowledgment. In conclusion, IAS is still at the heart of Nigeria's development, but in need of hybrid-reforming, handicapped by the age of the digital era, and institutionalized with upkeep to remain sustainable in globalization.

**Keywords:** Igbo Apprenticeship System (IAS); Entrepreneurship Development; Human Capital Formation; Challenges to Sustainability; South East Nigeria

### 1. Introduction

The Igbo Apprenticeship System (IAS) is a globally acclaimed indigenous model of entrepreneurship and wealth distribution, described by Harvard Business Review [51] as "the world's largest business incubation platform." Rooted in the traditional Igba-Odibo culture, IAS operates through mentorship and capital transfer, enabling disadvantaged youths to train under established entrepreneurs before receiving start-up capital. This system has long reduced unemployment, promoted self-reliance, and strengthened community resilience. However, globalization, weak institutions, and digital disruption now threaten its sustainability. Despite Nigeria's overall unemployment rate of 5.0% in Q1 2023, youth unemployment and underemployment remain above 42% [30]. With 70% of Nigerians under 30 [53], IAS offers an indigenous solution to job scarcity. SMEs, mostly Igbo-owned, contribute 48% of GDP and 84% of employment [31]. Yet participation in IAS has fallen to 35%, as youths favor tech ventures or wage jobs [15]. Once a resistance tool against colonial exclusion [34], IAS now faces legal ambiguities, exploitation, and reduced appeal amid

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urbanization and fintech growth. With Nigeria's population projected to reach 400 million by 2050 [40], IAS must adapt, digitalize, and modernize to sustain its relevance in human capital development.

**Table 1** Research Questions (RQs), Study Objectives (SOs), and Hypotheses (H1–H5)

Study Objective (SO)	Research Question (RQ)	Hypothesis (H <sub>0</sub> / H <sub>1</sub> )	Emerging Issues Considered
SO1: To determine whether the Igbo Apprenticeship System (IAS) has significantly contributed to entrepreneurial development in Southeast Nigeria.	RQ1: Has the IAS significantly increased entrepreneurial activities in the region?	H <sub>01</sub> : IAS has not significantly increased entrepreneurial activities. H <sub>11</sub> : IAS has significantly increased entrepreneurial activities.	Globalization and digital transformation hypothesized to negatively affect IAS sustainability.
SO2: To assess whether successful business owners attribute their achievements to IAS.	RQ2: Do entrepreneurs significantly attribute their success to IAS?	H <sub>02</sub> : Business owners do not attribute their success to IAS. H <sub>12</sub> : Business owners significantly attribute their success to IAS.	Intergenerational transfer of business knowledge and entrepreneurial identity.
SO3: To examine whether IAS fosters sustainable businesses and contributes to regional economic growth.	RQ3: Has the IAS significantly created sustainable businesses that drive local growth?	H <sub>03</sub> : IAS has not contributed to creating sustainable businesses. H <sub>13</sub> : IAS has significantly contributed to creating sustainable businesses.	Institutional gaps—weak legal protection, poor policy recognition, settlement enforcement.
SO4: To investigate the role of IAS in equipping apprentices with skills that promote self-reliance.	RQ4: Have IAS-acquired skills significantly empowered individuals toward independence?	H <sub>04</sub> : IAS skills have not significantly empowered individuals. H <sub>14</sub> : IAS skills have significantly empowered individuals.	Human capital empowerment through employability and productivity gains.
SO5: To evaluate the role of IAS in reducing unemployment in Southeast Nigeria.	RQ5: Does the IAS play a significant role in reducing unemployment in the region?	H <sub>05</sub> : IAS does not significantly reduce unemployment. H <sub>15</sub> : IAS significantly reduces unemployment.	Hybrid reforms integrating IAS with modern entrepreneurial and policy frameworks for resilience.

## 2. Literature Review

The Igbo Apprenticeship System (IAS) is globally recognized as one of the oldest forms of entrepreneurship, embodying centuries of indigenous innovation and informal economic strength [17], [24], [26], and [48]. Through mentorship, professional training, and post-apprenticeship settlement, IAS has consistently generated wealth and self-reliance despite limited resources. It contributes directly to Nigeria's informal economy, which accounts for 65% of GDP and 80% of employment [37]. However, with youth unemployment at 53.4% in Q4 2023 [20], IAS faces sustainability challenges driven by globalization, urbanization, and weak policy structures. Although it remains culturally vital and economically essential, there is limited empirical evidence on how global forces, such as digitalization and migration,

affect its sustainability. Policymakers and practitioners lack data-driven frameworks to guide IAS's adaptation and long-term viability.

## 2.1. Theoretical Frameworks

Three major theories explain IAS's structure and sustainability: Human Capital Theory [9] and [46], Social Capital Theory [45], and Indigenous Knowledge Systems [28]. Human Capital Theory frames IAS as an informal yet economically significant model for skill and entrepreneurial investment. Social Capital Theory emphasizes trust and reciprocity as the social glue that sustains it [44]. Indigenous Knowledge Systems (IKS) present IAS as a moral and cultural institution transmitting intergenerational values. However, few studies explore how these frameworks interact with modernization, technology, or digital economies [32]. A key conceptual challenge is developing institutional models that harmonize these theoretical strengths with 21st-century sustainability demands.

## 2.2. Human Capital Theory

[9] describes apprenticeship as a long-term investment in human capital. IAS trains marginalized youths into entrepreneurs outside formal schooling [34]. Yet, issues such as digital illiteracy, gender imbalance, and waning youth interest threaten sustainability. Youth participation in apprenticeship in Enugu has declined by 25% [29]. While IAS equips youths with craft skills, it rarely integrates modern digital or marketing competencies. Scholars diverge, [7] and [26] criticize gender exclusion, [49] commends its resilience, while [22] warns against excessive technologization. Sustaining IAS requires hybridizing tradition with innovation, merging indigenous models with digital inclusion to ensure social and economic relevance.

## 2.3. Social Capital Theory

[45] emphasizes trust and reciprocity as essential to community resilience. In IAS, trust substitutes for formal contracts between masters (Oga) and apprentices (Ndi boy). Globalization, urbanization, and shifting values now erode this trust, leading to increased defaults and exploitation [29]. The absence of compensation for breaches weakens IAS credibility. Studies in Ghana show similar challenges [32], suggesting structural vulnerabilities. [16] and [12] propose hybrid systems blending social trust with written contracts. Therefore, maintaining IAS sustainability requires balancing its informal trust-based structure with accountability mechanisms that ensure fairness and reliability.

## 2.4. Indigenous Knowledge Systems (IKS)

IAS exemplifies Indigenous Knowledge Systems, transmitting skills, morals, and entrepreneurship through experiential learning [24] and [42]. In places like Nnewi, it drives local enterprise development [25]. Yet, Western education and globalization threaten its relevance [2] and [41]. While some scholars see IAS as obsolete in digital economies [16], others argue for technological adaptation [51]. [5] recommends "glocalization", merging global innovation with cultural identity. Given 53% youth unemployment [30] and MSMEs contributing 48% of GDP [31], integrating technology and culture into IAS is vital for future sustainability.

## 2.5. Socioeconomic and Historic Origins of IAS

IAS emerged as a survival mechanism and later as Africa's foremost business education model [19]. Over 60% of SMEs in Onitsha, Aba, Enugu, and Nnewi trace their roots to it [8]. Originating after the Civil War, it empowered displaced Igbo youths through skill transfer and startup capital [1]. Through kinship-based mentorship, IAS strengthened social cohesion [32]. However, declining youth interest, wage dependence, and limited e-commerce skills undermine its continuity [15]. Critics cite its low-tech approach and lack of scalability [38]. Nonetheless, IAS remains central to poverty reduction and entrepreneurship, provided it evolves with modern finance and global standards.

## 2.6. IAS Research Gaps and Future Agenda

IAS research remains outdated, descriptive, and minimally empirical [8]. Despite Nigeria's youth-dominant demography [50], fewer than 40% of southeastern youths express interest in apprenticeship [15]. Studies neglect the effects of digital disruption, weak legal frameworks, and limited investment support. Comparative analyses with Ghana, Senegal, or Indonesia are rare [32] and [36]. Policy and academic recognition of IAS's developmental impact are minimal, while youth disinterest deepens. Scholars disagree, some advocate modernization, others preservation. Future studies must empirically test whether IAS's sustainability lies in reform, hybridization, or systemic integration.

## 2.7. Identified Gaps and Emerging Issues

IAS research remains fragmented and historical [8]. Key gaps include limited analysis of digital transformation, poor credit access, weak law enforcement, and gender exclusion [7], [14], and [26]. Comparative hybrid apprenticeship studies across Africa and Asia remain scarce [32] and [36]. While Human Capital Theory explains skills formation, it overlooks adaptation; Social Capital Theory describes trust but fails to capture its modern evolution. Globalization, urban migration, and debates over hybridization persist. Experts are divided, some seek preservation, others modernization. For IAS to endure, it must become empirically informed, digitally adaptive, and institutionally integrated within Nigeria's evolving socioeconomic order.

## 3. Methodology

A quantitative research design examined emerging issues threatening the sustainability of the Igbo Apprenticeship System (IAS) in Southeast Nigeria (2015–2023). Data were gathered through questionnaires assessing apprentice experiences, master practices, and community opinions, supported by limited qualitative methods for validation [4], [11], and [18]. The population included apprentices, masters, retired apprentices, parents, and community leaders from Abia, Anambra, and Enugu States, selected through multi-stage and snowball sampling to ensure reliability [14] and [25]. A total of 360 participants were involved. Semi-structured questionnaires and observation checklists achieved high internal consistency (Cronbach's  $\alpha = 0.950$ ). Data were analyzed using SPSS 23 through descriptive and inferential statistics, maintaining strict ethical standards.

## 4. Data collection

Both primary and secondary data were used. Primary data came from questionnaires answered by 240 apprentices, 90 masters, and 30 parents/guardians reached through churches, town halls, and markets. Secondary data came from books, studies, and official sources. Validity was ensured by expert review, reliability ( $\alpha = 0.874$ – $0.950$ ), and SPSS 23 analysis.

### 4.1. Operationalization of Variables and Emerging Issues

The applicability of the Igbo Apprenticeship System (IAS) in Southeast Nigeria was evaluated through measurable variables aligned with the study's purpose, research questions, and hypotheses. Entrepreneurial performance was assessed via business establishment rates, growth trends, and transitions from apprenticeship to ownership, confirming  $H_1$  that IAS facilitates entrepreneurship [33]. Entrepreneurs credited their success to IAS, supporting  $H_2$ , while  $H_3$  showed IAS-driven firms contribute to long-term growth, reinvestment, and community development [6] and [7].  $H_4$  validated IAS as a human capital empowerment system enhancing skills, autonomy, and employability, consistent with [9]'s human capital theory [23] and [34].  $H_5$  indicated IAS reduces unemployment by offering informal job opportunities, acting as a buffer for youth unemployment [42], [43], and [52]. Despite sustainability outcomes, the study found no strong policy linkage or formal recognition of IAS. Internationalization, ICT adoption, and e-commerce expansion drive modernization, yet institutional and policy gaps remain [53]. Cultural shifts, youth disinterest, and hybrid models reflect modernization's effects. Ultimately, the study revealed a key research gap, no quantitative evidence yet connects globalization, digitalization, institutional neglect, and cultural change in shaping IAS's future.

### 4.2. Statistical Method: Binomial Test of Proportions

Two-alternative responses, "Disagree" and "Agree," were separated from Likert-type scales so that proper statistical tests could be conducted [27]. Transformation made binomial proportion tests by Z-estimates available to establish whether the stimulated feeling differed significantly from a normal 0.50 test value [3] and [47]. Mean scores of Likert scales were also made easy to interpret, a two-edged measure of statistical openness.

**Table 2** Sampling Frame

State	Apprentices	Masters	Parents/Guardians	Total
Abia	80	30	10	120
Anambra	80	30	10	120
Enugu	80	30	10	120
Total	240	90	30	360

Source: Authors' Compilation from Field Survey.

### 4.3. Data Presentation and Analysis

Overall, the binomial test results ( $p < .01$ ) confirm that the Igbo Apprenticeship System (IAS) plays a critical role in human capital development in South East Nigeria. Most of the respondents agreed that IAS supports entrepreneurship (82%), business achievement (68%), viable businesses (76%), independence (80%), and curbing unemployment (75%). These findings collectively validate the study's objectives and emphasize the IAS as a major driver of socio-economic development in the region. Data from 360 respondents of six LGAs in Abia, Anambra, and Enugu States (100% response rate) were utilized to test Hypothesis 1, which maintained that the Igbo Apprenticeship System (IAS) is a significant contributory factor to human capital development in South East Nigeria. Binomial tests of proportions (Table 3) revealed highly significant findings ( $p < .01$ ) on all the parameters, showcasing that the respondent's significantly concurred IAS was an entrepreneur stimulator (82%), business success driver (68%), sustainable businesses catalyst (76%), self-reliance promoter (80%), and unemployment reduction agent (75%). The findings as a whole support the Hypotheses, corroborating IAS as being statistically significant and a change maker towards human capital growth in the region. Binomial Test results table with the five key factors.

**Table 3** Binomial Test of proportion using Z-approximation

Hypothesis Tested	Research Question	Group	N	Obed. Prop.	Test Prop.	Exact Sig. (2-tailed)
H <sub>11</sub> : IAS significantly increases entrepreneurship	RQ1: Has IAS significantly increased entrepreneurial activities?	No Yes Total	65 295 360	.18 .82 1.00	.50	.000 $p = 0.82; p < .01$ Test is Highly Significant. IAS has positively influenced entrepreneurship in the region.
H <sub>12</sub> : Entrepreneurs attribute success to IAS	RQ2: Do business owners attribute their success to IAS?	No Yes Total	117 243 360	.32 .68 1.00	.50	.000 $p = 0.68; p < .01$ Test is Highly Significant. Many business owners credit the IAS system for their success.
H <sub>13</sub> : IAS creates sustainable businesses	RQ3: Has IAS fostered sustainable businesses for economic growth?	No Yes Total	87 273 360	.24 .76 1.00	.50	.000 $p = 0.76; p < .01$ Test is Highly Significant. IAS is a significant contributor to sustainable business development in the region.
H <sub>14</sub> : IAS empowers self-reliance	RQ4: Have IAS-acquired skills empowered self-reliance?	No Yes Total	71 289 360	.20 .80 1.00	.50	.000 $p = 0.80; p < .01$ Test is Highly Significant. A significant view that IAS fosters self-reliance.
H <sub>15</sub> : IAS reduces unemployment	RQ5: Does IAS reduce unemployment in Southeast Nigeria?	No Yes Total	90 270 360	.25 .75 1.00	.50	.000 $p = 0.75; p < .01$ Test is Highly Significant. IAS is seen as a critical tool in reducing unemployment in the South East Nigeria

## 5. Results

The study achieved all five objectives, confirming the significant contribution of the Igbo Apprenticeship System (IAS) to human capital development in South East Nigeria. Using binomial tests on data from 360 respondents across Abia, Anambra, and Enugu States, all hypotheses were validated ( $p < .01$ ), affirming IAS's strong positive impact across study dimensions. Hypothesis 1 (Objective 1) showed that 82% agreed IAS significantly increased entrepreneurial activity, aligning with [33] on its long-term regional entrepreneurship impact. Hypothesis 2 (Objective 2) revealed 68% agreement that IAS fosters business success through intergenerational knowledge transfer, corroborating [6] and [10] on identity continuity in entrepreneurship.

For Hypothesis 3 (Objective 3), 76% affirmed IAS's role in sustaining businesses and promoting economic growth, consistent with [7], though institutional gaps threaten sustainability. Hypothesis 4 (Objective 4) showed 80% agreement that vocational skills gained through IAS foster self-sufficiency, supporting [9]'s human capital theory and [23]. Hypothesis 5 (Objective 5) confirmed that 75% believed IAS reduces unemployment, aligning with [43] on its role as a youth employment bulwark.

Overall, findings establish IAS as an indigenous model of entrepreneurship, skill acquisition, and job creation [13] and [38]. However, gaps remain in longitudinal and comparative studies of IAS performance under globalization and digital disruption. Socio-cultural factors, trust, resilience, and youth attitudes, also require further exploration. Emerging challenges include globalization, digital adaptation, weak institutional enforcement, and declining youth interest. Despite these, IAS remains a robust mechanism for entrepreneurship and human capital growth. The study concludes that all five hypotheses were significant ( $p < .01$ ), providing strong empirical evidence of IAS's enduring socio-economic relevance while identifying policy and research needs for its sustainability.

## 6. Discussion

Empirical evidence from this study affirms the continuing validity of the Igbo Apprenticeship System (IAS) as a vital mechanism for entrepreneurial skill development, self-employment, and job creation in South East Nigeria. A high majority (82%) confirmed IAS's significant positive influence on entrepreneurial activity ( $p = .82$ ;  $p < .01$ ), reinforcing [35] and [39] that IAS remains an indigenous wealth-creation system. However, contrary to [21], who noted declining youth participation, this study identifies a gap in explaining IAS's long-term viability amid generational disengagement. Furthermore, 68% of respondents linked business success to IAS mentorship and settlement practices, substantiating [8] and [13], who credit IAS with fostering prosperous SMEs.

Although critics such as [38] argue that informality limits scalability, 76% of participants asserted that IAS builds sustainable enterprises contributing to economic growth, corroborating [1] and [17] on its poverty-buffering role. Yet, its adaptation to globalized, technology-driven markets remain underexplored. Comparative research is needed to evaluate IAS's competitiveness in high-tech economies. Empowerment outcomes were also strong: 80% reported IAS-induced economic independence, affirming [9] Human Capital Theory and [34] on skill-driven self-sufficiency. Nevertheless, uncertainty persists on whether IAS integrates 21st-century competencies like ICT and digital marketing, highlighting the need for curriculum modernization.

Finally, 75% agreed that IAS alleviates unemployment, aligning with [13], though youth disinterest [15] threatens long-term sustainability. Policy reforms introducing hybrid digital apprenticeship models are recommended. Overall, IAS stands as a sustainable indigenous model for entrepreneurship, self-reliance, and employment generation. However, persistent gaps, youth disengagement, technological lag, institutional weaknesses, and gender exclusion—necessitate adaptive reforms and comparative research to secure IAS's relevance in a digital, globalized economy.

## 7. Conclusion

This research critically examined the Igbo Apprenticeship System (IAS) and its contribution to human capital formation in Southeast Nigeria, drawing evidence from 360 respondents across Abia, Anambra, and Enugu States. Findings revealed that IAS significantly enhances entrepreneurship success, business survival, skills transmission, and unemployment reduction, confirming all five research hypotheses at the 1% level. The study reinforces [9]'s Human Capital Theory, showing how culturally rooted apprenticeship fosters productivity and socioeconomic growth. Supported by recent studies, IAS was affirmed as a resilient, bottom-up wealth creation model. However, globalization, digital disruption, and institutional decay pose threats to its sustainability, necessitating modernization and policy adaptation.

*Recommendation*

To strengthen IAS, the study recommends policy, practical, and research interventions that integrate IAS into national entrepreneurship and vocational frameworks. Legal protection of apprenticeship, contract enforcement, and hybrid models combining traditional mentorship with digital and managerial training are essential. Governments should provide microcredit, tax incentives, and incubation centers, while mentors must embrace e-commerce and digital literacy to ensure competitiveness. Furthermore, longitudinal and comparative studies should assess IAS's long-term survival and psychological impact on youths. Overall, IAS remains a highly successful entrepreneurial model needing modernization, institutional reinforcement, and sustained academic inquiry for global competitiveness.

**Compliance with ethical standards***Acknowledgments*

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There are no conflicts of interest.

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