STANDARDIZATION AND PSYCHOMETRIC DEVELOPMENT OF IGBO ENTREPRENEURIAL TRAITS SCALE AMONG IGBO ENTREPRENEURS IN BLACKSMITH, TRADING, AND MANUFACTURING HUBS OF AWKA, ONITSHA, AND NNEWI CITIES IN ANAMBRA STATE, NIGERIA

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Abstract

Indigenous socio-cultural structures significantly shape entrepreneurial behavior, yet standardized psychometric instruments tailored to African commercial ecosystems remain scarce. This study evaluated the psychometric properties of the newly developed Igbo Entrepreneurial Traits Scale (IETS) among entrepreneurs in Southeastern Nigeria. A pilot sample of eighty-four (N = 84) indigenous Igbo participants was drawn from key commercial hubs in Anambra State (Awka, Onitsha, and Nnewi), comprising 50 males (59.5%) and 34 females (40.5%) spanning established business owners/managers (57.1%) and active apprentices undergoing the Igba Boi / Nwa-gielu system (42.9%), aged 20 to 58 years (M = 31.64, SD = 8.21). Psychometric evaluation yielded exceptional internal consistency (α = .93, while Exploratory Factor Analysis (EFA) revealed a robust 5-factor structure explaining 68.42% of total variance: (1) Frugality & Capital Preservation (Oruru tupu obi ụtọ), (2) Apprenticeship Tenacity & Experiential Mentorship (Igba Boi), (3) Calculated Risk & Market Opportunity Seeking, (4) Communal Solidarity & Network Trust (Onye Aghana Nwanne Ya), and (5) Strategic Autonomy & Market Adaptability. Item-total correlations ranged from .52 to .81, and convergent validity was confirmed across all subscales (AVE > .50, CR > .80). The IETS presents a culturally grounded, psychometrically sound measurement tool for industrial-organizational researchers, business incubators, and policymakers evaluating indigenous enterprise development.

Keywords: Igbo Entrepreneurial Traits Scale (IETS), Psychometric Validation, Igba Boi Apprenticeship System, Industrial-Organizational Psychology, Southeastern Nigeria, Commercial Clusters.

1. INTRODUCTION

Entrepreneurship in Southeastern Nigeria is deeply anchored in indigenous socio-cultural dynamics, most notably the Igba Boi (apprenticeship) system, informal commercial credit networks, and distinct psychological traits cultivated through socio-cultural socialization. While mainstream Industrial-Organizational (I/O) Psychology relies heavily on Western personality frameworks (such as the Big Five personality traits, Need for Achievement, and Rotter's Locus of Control), these universalist constructs often miss contextual nuances specific to African enterprise ecosystems. In particular, Western models emphasize hyper-individualistic profit-maximization and isolated trait dispositions, frequently overlooking communitarian mentorship, structured risk-sharing, and deferred personal gratification that characterize indigenous African trading hubs.

To address this critical measurement gap in African psychological literature, this study validates the Igbo Entrepreneurial Traits Scale (IETS) as a standalone, culturally grounded measurement instrument. By establishing the factorial validity, item discrimination, and internal reliability of

the IETS among business owners, managers, and apprentices across major commercial clusters in Anambra State (Awka, Onitsha, and Nnewi), this research provides I/O psychologists, psychometricians, and enterprise development experts with an empirically robust diagnostic tool.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Theoretical Foundations and Critique of Universalist Western Models

Classical economic and sociological paradigms of entrepreneurship—such as Weber's (1905) Protestant Work Ethic, McClelland's (1961) Achievement Motivation Theory, and Schumpeter's (1934, 1942) theory of Creative Destruction—posit that enterprise formation depends on specific psychological traits and ethical dispositions. However, these classical models were formulated predominantly within Western socio-cultural contexts and exhibit conceptual limitations when applied to developing economies in the Global South.

McClelland's (1961) assertion that non-Western societies lack a high Need for Achievement (nAch) and must adopt Western individualistic orientation to achieve economic growth has faced significant empirical and theoretical critique. Unlike Western frameworks that emphasize hyper-individualistic profit-maximization (Friedman, 1976; Jensen & Meckling, 1976), indigenous African commercial ecosystems—specifically the Igbo business community of Southeastern Nigeria—are grounded in moderate communitarianism, collective risk-sharing, and institutionalized mentorship (Gyekye, 1997; Menkiti, 1984). Rather than relying on individualistic isolation, Igbo entrepreneurship operates on African humanism and communal solidarity (Onye aghana nwanne ya), where personal advancement is tied to social responsibility and capacity building.

Table 1: Comparative Evaluation of Theoretical Frameworks in Entrepreneurship Research

Theoretical Model	Key Theorists	Core Proposition	Relevance to IETS Framework
Protestant Work Ethic	Weber (1905)	Thrift, discipline, and hard work drive capital accumulation.	Parallels 'Oruru tupu obi ụtọ' (frugality and profit reinvestment).
Need for Achievement	McClelland (1961)	Individual nAch predicts entrepreneurial performance.	Reconceptualized via collective achievement & 'Igba Boi' mentorship.
Creative Destruction	Schumpeter (1934, 1942)	Innovation and leadership disrupt established economic orders.	Reflected in practical market slot creation & experiential learning.
Moderate Communitarianism	Gyekye (1997); Menkiti (1984)	Individual flourishing is embedded in supportive social networks.	Underpins risk-sharing, credit clubs (Isusu), and 'Nwa-boi' model.
Theory of Planned Behavior	Ajzen (1993); Rokeach (1968)	Perceived control, subjective norms, and habits shape behavior.	Explains transition from latent traits to observable enterprise action.

2.2 Indigenous Cultural Mechanisms: The Igbo Apprenticeship System (Igba Boi)

At the operational core of Igbo entrepreneurial resilience is the Igbo Apprenticeship System (IAS), known locally as Igba Boi, Igba-Boyi, or Imu Oru. The IAS functions as an indigenous business incubation mechanism wherein an apprentice (Nwa-boi or Nwa-gielu) undergoes a multi-year contractual mentorship (typically 5 to 8 years) under an established master entrepreneur (Nna Ukwu or Ndi Nwe Oru) in major commercial centers such as Onitsha, Nnewi, Awka, Aba, and Lagos.

Recent empirical evaluations categorize the IAS mechanism into three mutually reinforcing pathways: (1) Practice-based tacit skill transfer covering pricing, stock rotation, inventory control, and customer negotiation; (2) Embedded financial capital deployment (settlement) provided by the master upon graduation, solving the initial startup capital barrier; and (3) Network and market access through inherited supplier links, credit access, customer goodwill, and social reputation within ethnic trading networks (Iwara et al., 2019; Obi, 2021; Omonijo et al., 2019).

2.3 Dimensionalization of Igbo Entrepreneurial Traits

Fieldwork and qualitative thematic evaluations across Igbo enterprise clusters reveal distinct socio-behavioral traits that constitute the Igbo Entrepreneurial Traits Scale (IETS):

- **Resilience and Effort Striving (Gbalisie ike ime nke ọma):** An unyielding commitment to perseverance, hard work, and overcoming market shocks.
- **Deferred Gratification (Ije ozi tupu obi ụtọ):** Prioritizing hard work, humble service, and foundational business development over immediate personal indulgence.
- **Altruistic Mentorship (Njikere ikụụziri ndi ọzọ ihe):** A commitment to train and settle subsequent generations of apprentices, creating a sustainable cycle of human capital development.
- **Frugality and Capital Preservation (Oruru tupu obi ụtọ):** Reinvesting profit allowances into working capital rather than luxury consumption during early enterprise growth.
- **Cross-Cultural Adaptability (Ibi na omenala ndi ọzọ):** Fluency in host languages and rapid integration into external commercial hubs.
- **Anti-Indolence Ethos (Enweghi ohere maka umengwụ):** Low socio-cultural tolerance for idleness or entrepreneurial laziness.

2.4 Psychometric Gap and Validation of the IETS

Standardized psychometric testing in Nigerian Industrial-Organizational Psychology has historically suffered from dependency on Western-developed inventories (e.g., Big Five Inventory, EAO), which miss indigenous socio-cultural constructs like Igba Boi tenure, communal risk-sharing (Isusu), and effort-reward ratios. To address this measurement deficiency this study established the factorial robustness of the Igbo Entrepreneurial Traits Scale (IETS). Evaluating entrepreneurs across major commercial clusters (Onitsha, Nnewi, and Awka) demonstrated exceptional internal reliability with a Cronbach's alpha coefficient of $\alpha = .93$. The scale provides a standardized, culturally grounded 20-item instrument for researchers and psychometricians.

3. EMPIRICAL METHODOLOGY

3.1 Research Design

This study adopted a cross-sectional psychometric validation design to systematically operationalize and evaluate the structural validity, item discrimination, and internal reliability of the newly developed Igbo Entrepreneurial Traits Scale (IETS). Given that mainstream Industrial-Organizational (I/O) Psychology relies on Western personality models that often fail to capture indigenous socio-cultural business mechanisms, a dedicated instrument validation methodology was executed. The research focused exclusively on establishing the psychometric soundness of the IETS as a standalone, culturally grounded measurement instrument.

3.2 Study Location, Participants, and Sampling Procedure

The pilot study was conducted across three major commercial hubs in Anambra State, Southeastern Nigeria: Awka (administrative center and emerging technological commercial node), Onitsha (West Africa's primary trade distribution market), and Nnewi (industrial and manufacturing enterprise cluster). These commercial hubs were selected due to their high concentration of indigenous Igbo-owned enterprises and active apprenticeship networks.

A sample of eighty-four (N = 84) indigenous Igbo entrepreneurial actors was drawn using a multi-stage purposive sampling technique. The sample comprised 50 males (59.5%) and 34 females (40.5%), capturing representation across gender lines within the commercial ecosystem. Participants' ages ranged from 20 to 58 years, with a mean age of M = 31.64 years (SD = 8.21).

To ensure representation across different stages of participation in the Igbo entrepreneurial ecosystem, the sample integrated both established business owners/managers (n = 48, 57.1%) and active apprentices undergoing the Igba Boi / Nwa-gielu system (n = 36, 42.9%). Business owners provided data based on direct managerial decision-making, capital commitment, risk management, and market expansion; apprentices provided perspectives grounded in practical trade immersion, customer negotiation, and experiential mentorship under business masters.

Table 2: Demographic Characteristics of Pilot Study Participants (N = 84)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	50	59.5%
	Female	34	40.5%
Ecosystem Role	Established Business Owner / Manager	48	57.1%
	Apprentice (Nwa-boi / Nwa-gielu)	36	42.9%
Commercial Hub Cluster	Onitsha (Commercial Hub)	38	45.2%
	Nnewi (Industrial Cluster)	26	31.0%
	Awka (Admin / Tech Node)	20	23.8%

3.3 Instrument Structure and Candidate Item Generation

The candidate item pool for the IETS was generated through qualitative thematic extraction from field interviews with master entrepreneurs and existing literature on indigenous Igbo business practices. An initial pool of 25 candidate items was developed on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The items were contextualized to assess key socio-cultural dimensions, including deferred gratification, capital reinvestment (Oruru tupu obi ụtọ), apprenticeship tenacity, communal solidarity (Onye aghana nwanne ya), and cross-cultural adaptability (Ibi na omenala ndi ọzọ).

4. PILOT STUDY STATISTICAL RESULTS

4.1 Global Internal Reliability

Psychometric evaluation of the scale among the 84 participants yielded an exceptional overall Cronbach's alpha coefficient of $\alpha = .93$. This result indicates outstanding internal consistency and confirms the empirical baseline reported across broader commercial clusters in Anambra State, Nigeria (Onitsha, Nnewi, and Awka).

4.2 Factorial Validity and Exploratory Factor Analysis (EFA)

To evaluate construct validity and identify the underlying latent dimensions of the IETS, Exploratory Factor Analysis (EFA) using Principal Component Analysis (PCA) with Varimax Rotation was performed. Sampling adequacy was verified prior to extraction: Kaiser-Meyer-Olkin (KMO) measure = .884, substantially exceeding the .60 threshold; Bartlett's Test of Sphericity $\chi^2(190) = 842.15$, $p < .001$, confirming strong inter-item correlation matrix suitability.

Applying the Kaiser criterion (Eigenvalues > 1.0) and scree plot inspection, five orthogonal factors emerged. Five candidate items exhibiting weak primary loadings (< .50) or cross-loadings (> .40) were eliminated during item trimming, resulting in a refined 20-item scale. The 5-factor solution accounted for 68.42% of total cumulative variance:

- **Factor 1: Frugality & Capital Preservation (Oruru tupu obi ụtọ)** (5 items, Eigenvalue = 6.42, 25.68% variance explained). Assesses disciplined profit reinvestment and capital preservation prior to personal consumption.
- **Factor 2: Apprenticeship Tenacity & Experiential Mentorship (Igba Boi)** (4 items, Eigenvalue = 3.81, 15.24% variance explained). Measures long-term perseverance, mentorship loyalty, and practical trade mastery.
- **Factor 3: Calculated Risk & Market Opportunity Seeking** (4 items, Eigenvalue = 2.85, 11.40% variance explained). Evaluates boldness in entering competitive trade slots and committing capital under uncertainty.
- **Factor 4: Communal Solidarity & Network Trust (Onye Aghana Nwanne Ya)** (4 items, Eigenvalue = 2.10, 8.40% variance explained). Captures reliance on informal credit associations (Isusu), shared risk, and collective network reputation.
- **Factor 5: Strategic Autonomy & Market Adaptability** (3 items, Eigenvalue = 1.92, 7.68% variance explained). Measures rapid customer adaptation, business flexibility, and independent operational control.

Table 3: Rotated Factor Loading Matrix and Item Properties for the 20-Item IETS (N = 84)

Item Code & Statement Summary	F1	F2	F3	F4	F5	Item-Tot r	α if Del.
Factor 1: Frugality & Capital Preservation							
IETS_01: Reinvest profits before personal luxury	.84	.12	.08	.11	.05	.78	.924
IETS_02: Maintain frugal living to protect working capital	.81	.15	.10	.09	.04	.75	.925
IETS_03: Avoid unnecessary displays during early growth	.79	.18	.14	.07	.08	.72	.926
IETS_04: Prioritize expansion over immediate pleasure	.76	.20	.12	.15	.11	.70	.927
IETS_05: Reserve cash allowances strictly for restocking	.72	.14	.18	.10	.12	.66	.928
Factor 2: Apprenticeship Tenacity & Mentorship							
IETS_06:	.14	.82	.11	.16	.08	.74	.925

Long-term service under master vital for mastery							
IETS_07: Endure trade rigors to secure settlement	.11	.80	.15	.12	.10	.72	.926
IETS_08: Value experiential learning over theory	.18	.75	.20	.08	.14	.68	.927
IETS_09: Maintain lifelong loyalty with master	.10	.71	.12	.22	.09	.65	.928
Factor 3: Calculated Risk & Market Seeking							
IETS_10: Enter competitive trade slots despite uncertainty	.12	.14	.79	.10	.15	.71	.926
IETS_11: Commit personal capital to unproven goods	.09	.10	.76	.14	.18	.68	.927
IETS_12: Expand business into unfamiliar markets	.15	.18	.72	.09	.12	.64	.928
IETS_13: View high market volatility as	.11	.12	.68	.18	.20	.61	.929

opportunity							
Factor 4: Communal Solidarity & Network Trust							
IETS_14: Rely on informal credit clubs (Isusu)	.10	.16	.12	.78	.09	.69	.926
IETS_15: Share market risk through ethnic alliances	.08	.15	.11	.74	.14	.66	.927
IETS_16: Uphold communal trust (Onye aghana nwanne ya)	.12	.20	.09	.71	.11	.63	.928
IETS_17: Provide mentorship and seed support to kin	.15	.18	.14	.67	.16	.60	.929
Factor 5: Strategic Autonomy & Adaptability							
IETS_18: Rapidly adjust products to customer demand	.07	.11	.18	.12	.76	.62	.928
IETS_19: Make independent decisions without delay	.10	.09	.20	.10	.72	.58	.929

IETS_20: Pivot product lines swiftly when trends shift	.12	.14	.15	.13	.68	.55	.930

4.3 Subscale Reliability and Convergent Validity

Item-total correlations ranged from .52 to .81, well above the minimum psychometric standard of .30. Subscale internal reliability coefficients, Composite Reliability (CR), and Average Variance Extracted (AVE) values confirmed robust sub-dimension stability:

Table 4: Subscale Psychometric Properties and Convergent Validity (N = 84)

Subscale Dimension	Items	Mean (M)	Std Dev (SD)	Cronbach α	Comp. Rel. (CR)	AVE
1. Frugality & Capital Preservation	5	21.45	3.12	.91	.92	.68
2. Apprenticeship Tenacity (Igba Boi)	4	17.20	2.65	.88	.89	.66
3. Calculated Risk & Market Seeking	4	15.84	2.81	.85	.86	.61
4. Communal Solidarity & Trust	4	16.42	2.40	.83	.85	.58
5. Strategic Autonomy & Adaptability	3	12.18	1.95	.81	.83	.54

All AVE values exceeded .50, establishing strong convergent validity across the sub-dimensions. Heterotrait-Monotrait (HTMT) ratios were all below .85, confirming discriminant validity against general self-efficacy metrics.

5. DISCUSSION AND IMPLICATIONS

5.1 Discussion of Psychometric Findings

The empirical findings from the pilot study (N = 84) confirm that the Igbo Entrepreneurial Traits Scale (IETS) is a highly reliable, factorially valid, and culturally grounded measurement instrument specifically tailored for African enterprise ecosystems. The overall Cronbach's alpha coefficient of α = .93 demonstrates exceptional internal consistency reliability across the 20 refined scale items. This finding replicates and strongly aligns with the empirical baseline studies who reported an identical reliability coefficient (α = .93) across a broader multi-cluster sample spanning Onitsha, Enugu, Abakaliki, Owerri, Nnewi, and Aba. The high internal consistency across both established business owners/managers (57.1%) and active apprentices (42.9%) confirms that the scale items capture coherent, deeply embedded psychological dispositions shared across different developmental tiers of the Igbo commercial ecosystem.

5.2 Theoretical and Methodological Contributions

From a theoretical perspective, this study advances the de-westernization of psychometric assessment in African Industrial-Organizational Psychology. By operationalizing indigenous constructs such as Igba Boi tenure, Oruru tupu obi ụtọ (frugality), and Onye aghana nwanne ya (communal solidarity), the IETS bridges the gap between universalist psychological theories and contextual African business realities. The scale challenges Eurocentric assumptions that individualistic achievement orientation is the sole driver of enterprise formation, showing instead that communitarian mentorship and structured collective risk-sharing drive enterprise longevity.

Methodologically, the study provides a standardized, 20-item psychometrically validated instrument with demonstrated convergent validity (AVE > .50, CR > .80 across all subscales) and item discrimination indices ranging from .52 to .81. The inclusion of both established business owners and emerging

apprentices in the pilot sample validates the instrument's utility across different career developmental stages within informal and semi-formal commercial clusters.

5.3 Practical and Managerial Implications

The validation of the IETS carries direct practical value for I/O psychologists, human resource specialists, business incubators, and policymakers working in African enterprise development:

1. **Selection & Assessment Tool in Apprenticeship Incubation:** Master entrepreneurs and trade association leaders in commercial hubs like Onitsha, Nnewi, and Aba can utilize the IETS as a structured diagnostic tool to evaluate candidate apprentices' baseline tenacity, frugality, and ethical disposition prior to multi-year capital commitment.
2. **Design of Tailored Entrepreneurship Development Programs:** Government agencies (e.g., SMEDAN) and non-governmental organizations designing intervention programs for informal enterprise clusters can draw upon the 5-factor structure of the IETS to craft training modules that reinforce capital preservation, strategic network utilization, and market slot adaptability.
3. **Psychometric Research in African Contexts:** Researchers and psychometricians across African universities now possess a standardized, indigenous measurement scale that eliminates reliance on unvalidated translations or culturally mismatched Western personality inventories.

6. LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Despite the strong psychometric properties established in this study, certain methodological limitations should be noted. First, the pilot study sample size of N = 84 was drawn specifically from three commercial hubs in Anambra State (Awka, Onitsha, and Nnewi). Although the sample size met psychometric requirements for pilot factor analysis (item-to-respondent ratio > 1:4) and replicated multi-cluster baseline findings, future research should expand sample sizes across a wider geographical range.

Second, the cross-sectional nature of the data collection limits long-term tracking of trait evolution from apprenticeship through mastership. Future scholars are advised to: (1) Execute Confirmatory Factor Analysis (CFA) using structural equation modeling (SEM) on larger, representative samples (N > 300) across all six Southeastern states and major diaspora trading nodes (e.g., Lagos, Kano, Houston); (2) Conduct longitudinal tracking studies following cohorts of apprentices from entry into the Igba Boi system through settlement and independent business launch; and (3) Adapt and test the IETS framework among other prominent indigenous entrepreneurial groups in West Africa (such as Yoruba trade networks or Ashanti traders in Ghana) to test cross-cultural psychometric equivalence.

7. CONCLUSION

The Igbo Entrepreneurial Traits Scale (IETS) represents a significant psychometric contribution to African Industrial-Organizational Psychology and indigenous enterprise studies. Demonstrating exceptional internal reliability (α = .93), robust item discrimination (.52 to .81), and a clear 5-factor structure accounting for 68.42% of variance, the 20-item IETS provides a culturally grounded, empirically validated instrument. By systematically measuring Frugality & Capital Preservation, Apprenticeship Tenacity, Calculated Risk-Taking, Communal Solidarity, and Strategic Autonomy, the IETS fills a crucial methodological gap and establishes a solid psychometric foundation for future research on indigenous African entrepreneurship.

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