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Sustainability Unlocked: Entrepreneurial Keys to Global Impact Insights from 200 Enterprises Across Africa

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Abstract: *This study examined the entrepreneurial strategies, organizational capabilities, and contextual factors that drove sustainability outcomes among 200 enterprises across diverse sectors and regions in Africa. A quantitative cross-sectional research design was employed, with data collected through structured questionnaires administered to enterprise owners, managers, and sustainability leads, and analyzed using descriptive statistics, Pearson correlation analysis, and two-level hierarchical linear modeling (HLM). Findings revealed that the sampled enterprises demonstrated moderate to moderately-high overall sustainability performance, with social impact scoring highest and environmental stewardship recording the lowest mean, reflecting persistent structural barriers to green transition. Entrepreneurial orientation was found to be a significant positive predictor of sustainability performance, with innovativeness and proactiveness emerging as the strongest drivers, while risk-taking exerted a comparatively modest effect. Multilevel modeling confirmed that access to finance, institutional environment quality, and market competitiveness served as significant contextual moderators that amplified or constrained the relationship between entrepreneurial orientation and sustainability outcomes, collectively explaining 50% of Level-1 variance and 66% of Level-2 variance in the full model. The study concluded that sustainability performance among African enterprises was neither a product of entrepreneurial effort alone nor of contextual conditions in isolation, but emerged from the dynamic interaction between enterprise-level innovation and proactivity on one hand, and enabling macro-environmental conditions on the other, with implications for policymakers, development financiers, and enterprise support organizations seeking to scale sustainable entrepreneurship across the continent.*

Keywords: Entrepreneurial orientation, sustainability performance, multilevel modeling, and contextual moderation

Introduction

The intersection of entrepreneurship and sustainability has emerged as one of the most consequential frontiers in contemporary development discourse, particularly within the African context where the imperatives of economic growth, social equity, and environmental stewardship converge with unique urgency (Bullough et al., 2022; Hytti et al., 2024; Lesinskis et al., 2023). Africa, home to the world's youngest and fastest-growing population, faces an unprecedented paradox: it possesses extraordinary natural wealth, demographic vitality, and entrepreneurial dynamism, yet continues to grapple with systemic poverty, climate vulnerability, environmental degradation, and institutional fragility that collectively undermine long-term development prospects (Hidalgo et al., 2024; Neck & Corbett, 2018; Rebecca et al., 2024). In this landscape, enterprises are increasingly recognized not merely as engines of profit, but as pivotal architects of sustainable transformation capable of generating far-reaching social and environmental impact alongside economic value (An et al., 2022; Halimah & Gracious Kazaara, 2024; Mahfud et al., 2020). This study examined the entrepreneurial strategies, organizational capabilities, and contextual enablers that distinguish enterprises achieving meaningful sustainability outcomes across the African continent, drawing on empirical insights from 200 enterprises spanning diverse sectors, geographies, and institutional environments. By interrogating the mechanisms through which entrepreneurship unlocks sustainability at scale, this research contributed to a growing body of evidence-based knowledge on how African enterprises can serve as catalysts for achieving the United Nations Sustainable Development Goals (SDGs), advancing climate resilience, and fostering inclusive prosperity across local, national, and regional dimensions (Boers et al., 2025; Schiuma et al., 2022; Sinha et al., 2024).

Background of the Study

The global sustainability agenda, anchored by the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change, has placed increasing pressure on both public and private actors to rethink the foundations of economic activity and organizational purpose. Within Africa specifically, the private sector—and small and medium enterprises (SMEs) in particular—has been identified by institutions such as the African Union, the United Nations Economic Commission for Africa (UNECA), and the World Bank as a critical lever for achieving the SDGs, given the continent's expanding entrepreneurial ecosystem and the well-documented limitations of state capacity in delivering public goods at scale (Abdimomynova et al., 2021; Guindalini et al., 2021; Julius, 2023; Zehra & Usmani, 2021). Over the past two decades, a growing wave of impact-oriented enterprises has emerged across Sub-Saharan Africa, East Africa, North Africa, and the wider continent, combining market-based models with deliberate social and environmental objectives—variously described in the literature as social enterprises, hybrid organizations, impact ventures, and purpose-driven businesses (Fini et al., 2018; Johnson et al., 2023; Nancy et al., 2024; Rebecca & Vincent, 2024). Despite this proliferation, empirical research systematically examining the sustainability performance of African enterprises across multiple countries and sectors has remained sparse, fragmented, and often limited to case studies that resist generalization. Foundational theoretical frameworks—including stakeholder theory (Freeman, 1984), the triple bottom line (Elkington, 1997), dynamic capabilities theory (Teece et al., 1997), and sustainable entrepreneurship theory (Shepherd & Patzelt, 2011)—offer important

conceptual scaffolding, yet their applicability to the unique institutional, cultural, and infrastructural realities of African enterprises has been insufficiently tested (Catherine & Kimata Joshua, 2024; Muhammed & Henry, 2024; Rietveld & Hoogendoorn, 2022; Tuti Kamila Sukma et al., 2023; Vecchiarini & Somià, 2023). This study was therefore grounded in a recognition that understanding sustainability in the African entrepreneurial context demands empirically rigorous, multi-level, and contextually sensitive inquiry that goes beyond Western-centric models to capture the indigenous strategies, relational networks, and adaptive capacities through which African enterprises are navigating complex sustainability challenges.

Problem Statement

Despite the growing recognition of entrepreneurship as a vehicle for sustainable development in Africa, there remains a critical gap in systematic, large-scale empirical evidence on the specific entrepreneurial strategies, organizational factors, and contextual conditions that enable African enterprises to generate and sustain meaningful social, environmental, and economic impact (Arinaitwe Julius & Kimata Joshua, 2024; Catherine et al., 2024; District et al., 2023; Enock & Jill Margaret, 2024; Goaill & Al-Hakimi, 2021). Most existing studies are narrowly focused on single countries, specific sectors, or isolated dimensions of sustainability, leaving policymakers, investors, and enterprise practitioners without the comprehensive, cross-contextual insights needed to design effective interventions and support systems (Jollet, 2024; Jones et al., 2024; Julius & Gracious Kaazara, 2025a; Sarah & Nancy, 2024). Furthermore, the mechanisms through which entrepreneurial orientation translates into measurable sustainability outcomes across diverse African institutional environments remain poorly understood, limiting the ability to scale successful models or replicate impact across different contexts (Julius & Gracious Kaazara, 2025b). This study addressed this gap by systematically investigating the entrepreneurial determinants of sustainability performance across 200 enterprises in Africa, generating evidence that is both analytically rigorous and practically actionable.

Main Objective

To examine the entrepreneurial strategies, organizational capabilities, and contextual factors that drive sustainability outcomes among enterprises across Africa, and to derive evidence-based insights for enhancing the contribution of entrepreneurship to sustainable development on the continent.

Specific Objectives

1. To assess the levels and dimensions of sustainability performance—economic, social, and environmental—among the 200 sampled enterprises across Africa.
2. To examine the relationship between entrepreneurial orientation (innovativeness, proactiveness, and risk-taking) and sustainability outcomes among the sampled enterprises.
3. To determine the extent to which contextual factors—including institutional environment, access to finance, and market conditions—moderate the effect of entrepreneurial strategies on sustainability performance across different African regional and sectoral contexts.

Research Questions

1. What are the levels and patterns of sustainability performance—economic, social, and environmental—among enterprises across Africa?
2. How does entrepreneurial orientation relate to sustainability outcomes among the sampled enterprises in Africa?
3. To what extent do contextual factors such as institutional environment, access to finance, and market conditions moderate the relationship between entrepreneurial strategies and sustainability performance across different African contexts?

Methodology

This study employed a quantitative cross-sectional research design to investigate the entrepreneurial determinants of sustainability performance among 200 enterprises drawn from across the African continent. A stratified purposive sampling technique was used to select enterprises across diverse sectors—including agriculture, manufacturing, technology, health, and renewable energy—and geographic regions, spanning Sub-Saharan Africa, East Africa, West Africa, North Africa, and Southern Africa, thereby ensuring representativeness across the continent's varied institutional and economic contexts. Primary data were collected through structured questionnaires administered to enterprise owners, managers, or sustainability leads, with the instrument adapted from validated scales including the Entrepreneurial Orientation Scale (Covin & Slevin, 1989), the Triple Bottom Line Performance Index, and contextual factor items drawn from the World Bank Enterprise Survey framework; the instrument underwent expert content validation and a pilot test with 20 enterprises to establish reliability, yielding a Cronbach's alpha coefficient of 0.83 across all constructs. Data were analyzed using a three-tiered statistical approach that progressively built analytical depth: at the univariate level, descriptive statistics—including frequencies, percentages, means, and standard deviations—were computed to profile the distribution, central tendencies, and variability of sustainability performance indicators and entrepreneurial characteristics across the sampled enterprises; at the bivariate level, Pearson product-moment correlation analysis and independent samples t-tests were conducted to examine the direction, strength, and statistical significance of pairwise associations between entrepreneurial orientation dimensions (innovativeness, proactiveness, and risk-taking) and sustainability outcome variables (economic performance, social impact scores, and environmental stewardship indices), with results interpreted at the 0.05 level of significance; at the multivariate

level, multilevel modeling (MLM)—specifically two-level hierarchical linear modeling (HLM)—was employed to account for the nested data structure, with individual enterprises (Level 1) nested within country-level and regional institutional contexts (Level 2), thereby enabling the simultaneous estimation of within-group entrepreneurial effects and between-group contextual moderation effects, including the cross-level interaction terms for access to finance, regulatory environment quality, and market competitiveness as moderators of the entrepreneurial orientation–sustainability performance relationship; all statistical analyses were conducted using IBM SPSS Statistics version 26 and the HLM 7.0 software, with model fit assessed using deviance statistics and intraclass correlation coefficients (ICCs) to justify the multilevel approach (Nelson et al., 2022, 2023).

Results.

Table 1: Univariate Analysis — Descriptive Statistics of Key Study Variables (n = 200)

Variable	Min	Max	Mean	Std. Dev	Skewness	Kurtosis
Economic Performance Score	1.20	5.00	3.42	0.81	-0.31	0.14
Social Impact Score	1.00	5.00	3.67	0.74	-0.44	0.29
Environmental Stewardship Index	1.00	5.00	3.21	0.93	-0.18	-0.22
Overall Sustainability Performance	1.10	5.00	3.43	0.72	-0.27	0.08
Innovativeness	1.00	5.00	3.58	0.79	-0.39	0.17
Proactiveness	1.00	5.00	3.44	0.85	-0.22	-0.11
Risk-Taking	1.00	5.00	3.11	0.91	0.12	-0.31
Overall Entrepreneurial Orientation	1.20	5.00	3.38	0.76	-0.19	0.05
Access to Finance	1.00	5.00	2.87	1.02	0.21	-0.44
Institutional Environment Quality	1.00	5.00	2.93	0.98	0.17	-0.38
Market Competitiveness	1.00	5.00	3.29	0.88	-0.08	-0.19
Enterprise Age (years)	1	32	8.64	5.73	1.42	2.17
Enterprise Size (no. of employees)	2	310	47.3	52.6	2.84	9.61

All scale variables measured on a 5-point Likert scale (1 = Very Low/Strongly Disagree; 5 = Very High/Strongly Agree)

The descriptive statistics revealed that the sampled enterprises demonstrated moderate to moderately-high levels of sustainability performance across all three dimensions, with mean scores ranging from 3.21 (Environmental Stewardship Index, SD = 0.93) to 3.67 (Social Impact Score, SD = 0.74) on the five-point scale. The overall sustainability performance mean of 3.43 (SD = 0.72) indicated that a substantial proportion of enterprises were performing at above-midpoint levels, suggesting that entrepreneurial activity in Africa was increasingly oriented toward multi-dimensional value creation rather than purely economic output. Environmental stewardship registered the lowest mean among the three sustainability dimensions, reflecting persistent structural barriers—including limited access to green technologies, weak environmental regulatory enforcement, and high transition costs—that continued to constrain the environmental ambitions of African enterprises. The skewness and kurtosis values for all scale variables fell within the acceptable range of ±2.0, confirming approximate normality in the distribution of scores and validating the appropriateness of parametric inferential tests in subsequent analyses. Enterprise age and size displayed markedly positive skewness (1.42 and 2.84 respectively) and high kurtosis values, indicating the presence of a small number of larger, older firms within a predominantly young and micro-to-small enterprise sample, a distribution pattern that is consistent with the structural composition of African business ecosystems where micro and small enterprises constitute the overwhelming majority.

Regarding the entrepreneurial orientation constructs, innovativeness recorded the highest mean score (M = 3.58, SD = 0.79), followed by proactiveness (M = 3.44, SD = 0.85) and risk-taking (M = 3.11, SD = 0.91), indicating that African enterprises in the sample were relatively stronger on product and process innovation and market foresight than on willingness to commit resources under conditions of uncertainty. This finding was theoretically significant, as it suggested that the entrepreneurial profile of African enterprises was characterized more by adaptive and opportunity-seeking behavior than by bold, high-stakes risk appetite—a disposition that may reflect rational responses to volatile macroeconomic environments, limited financial safety nets, and thin capital markets prevalent across much of the continent. The contextual factor variables painted a particularly revealing picture: access to finance (M = 2.87, SD = 1.02) and institutional environment quality (M = 2.93, SD = 0.98) both registered means below 3.00, confirming that these enterprises operated in environments marked by substantial financial exclusion and institutional deficits, which prior literature has consistently identified as among the most binding constraints on enterprise-level sustainability performance in developing economies (Ayyagari et al., 2016; World Bank, 2023). The relatively wider standard deviations observed for access to finance and enterprise size further underscored the high degree of heterogeneity within the sample, reinforcing the need for context-sensitive analytical approaches such as the multilevel modeling applied in subsequent stages of this study.

Table 2: Bivariate Analysis — Pearson Correlation Matrix of Entrepreneurial Orientation Dimensions and Sustainability Outcomes (n = 200)

Variable	1	2	3	4	5	6	7
1. Economic Performance	1.00						

2. Social Impact Score	.61**	1.00					
3. Environmental Stewardship	.49**	.53**	1.00				
4. Overall Sustainability	.82**	.84**	.79**	1.00			
5. Innovativeness	.47**	.52**	.38**	.54**	1.00		
6. Proactiveness	.43**	.49**	.41**	.51**	.63**	1.00	
7. Risk-Taking	.31**	.27**	.33**	.36**	.44**	.49**	1.00
8. Overall EO	.51**	.55**	.44**	.58**	.87**	.86**	.72**

$p < .001$; $p < .05$ (two-tailed). EO = Entrepreneurial Orientation

The Pearson correlation analysis revealed statistically significant positive associations between all three dimensions of entrepreneurial orientation and the sustainability outcome variables, with all correlations significant at the $p < .001$ level, providing robust bivariate support for the central hypothesis of this study. Overall entrepreneurial orientation demonstrated the strongest correlation with overall sustainability performance ($r = .58$, $p < .001$), indicating a moderate-to-strong positive linear relationship whereby enterprises exhibiting higher levels of innovativeness, proactiveness, and risk-taking collectively tended to report substantially better sustainability outcomes across economic, social, and environmental dimensions. Among the individual entrepreneurial orientation dimensions, innovativeness emerged as the strongest predictor of overall sustainability ($r = .54$, $p < .001$), followed closely by proactiveness ($r = .51$, $p < .001$), while risk-taking, though still significant, demonstrated the weakest association ($r = .36$, $p < .001$). The correlation between innovativeness and social impact ($r = .52$, $p < .001$) was particularly notable, suggesting that enterprises investing in new products, services, and processes were simultaneously generating greater community-level value—a finding consistent with the social innovation literature that positions creative enterprise activity as a primary mechanism for addressing unmet social needs in resource-constrained environments (Mulgan, 2006; Tracey & Stott, 2017).

The inter-dimensional correlations within the sustainability performance construct were also theoretically informative: the strongest within-sustainability correlation was observed between overall sustainability and social impact ($r = .84$, $p < .001$), followed by economic performance ($r = .82$, $p < .001$) and environmental stewardship ($r = .79$, $p < .001$), confirming that social impact was the most heavily weighted component of the composite sustainability index within this sample and context. The moderately strong inter-correlations among the three entrepreneurial orientation dimensions—particularly between innovativeness and proactiveness ($r = .63$, $p < .001$) and proactiveness and risk-taking ($r = .49$, $p < .001$)—confirmed the convergent validity of the EO construct while also indicating that these are distinguishable facets warranting separate analytical treatment, consistent with the reflective multi-dimensional EO conceptualization advanced by Lumpkin and Dess (1996). Importantly, the relatively weaker correlations involving risk-taking across all sustainability dimensions suggested that the nature and outcomes of risk-taking behavior in African entrepreneurial contexts may be qualitatively different from Western models—where risk tolerance is often rewarded by well-functioning capital markets and formal support ecosystems—pointing instead to a strategic calculus in which African entrepreneurs temper risk exposure in recognition of systemic institutional and financial vulnerabilities, a pattern that the subsequent multilevel analysis was designed to further illuminate.

Table 3: Multilevel Modeling — Fixed and Random Effects of Entrepreneurial Orientation and Contextual Moderators on Overall Sustainability Performance

Parameter	Model 0 (Null)	Model 1 (Level-1 EO)	Model 2 (Level-2 Context)	Model 3 (Full + Interactions)
Fixed Effects				
Intercept	3.43***	1.89***	1.74***	1.61***
Innovativeness	—	0.24***	0.22***	0.21***
Proactiveness	—	0.19***	0.17***	0.16***
Risk-Taking	—	0.11*	0.10*	0.09*
Access to Finance (AoF)	—	—	0.18***	0.17***
Institutional Environment (IE)	—	—	0.15**	0.14**
Market Competitiveness (MC)	—	—	0.09*	0.08*
EO × AoF (interaction)	—	—	—	0.14**
EO × IE (interaction)	—	—	—	0.12**
EO × MC (interaction)	—	—	—	0.07*
Random Effects				
Level-1 Residual Variance	0.519	0.341	0.298	0.261
Level-2 Intercept Variance	0.112	0.087	0.051	0.038
Model Fit				

ICC	0.177	—	—	—
Deviance (-2LL)	498.3	421.6	389.4	362.1
Δ Deviance (vs. prev. model)	—	76.7***	32.2***	27.3***
Pseudo R^2 (Level-1)	—	0.34	0.43	0.50
Pseudo R^2 (Level-2)	—	0.22	0.54	0.66

****p* < .001; **p* < .01; *p* < .05*

The multilevel modeling results provided compelling and statistically robust evidence for the multi-level structure of sustainability performance among African enterprises, and for the significant role of both enterprise-level entrepreneurial orientation and country/regional-level contextual factors in shaping these outcomes. The null model (Model 0) yielded an intraclass correlation coefficient (ICC) of 0.177, indicating that approximately 17.7% of the total variance in sustainability performance was attributable to between-country and between-regional differences, statistically justifying the application of multilevel modeling over conventional OLS regression and confirming that enterprise sustainability outcomes in Africa were meaningfully shaped by the broader institutional and macroeconomic environments in which enterprises were embedded. The introduction of the three entrepreneurial orientation dimensions in Model 1 produced a significant reduction in deviance (Δ deviance = 76.7, $p < .001$) and explained 34% of Level-1 variance, with innovativeness ($\beta = 0.24$, $p < .001$) and proactiveness ($\beta = 0.19$, $p < .001$) emerging as the strongest enterprise-level predictors of sustainability performance, while risk-taking, though significant ($\beta = 0.11$, $p < .05$), exerted a comparatively modest effect—corroborating the bivariate findings and reinforcing the interpretation that innovation-driven and opportunity-anticipating behavior are the most consequential entrepreneurial mechanisms for sustainability generation in Africa's complex operating environments. Adding the Level-2 contextual variables in Model 2 produced a further significant improvement in fit (Δ deviance = 32.2, $p < .001$), with access to finance ($\beta = 0.18$, $p < .001$) demonstrating the strongest contextual effect, followed by institutional environment quality ($\beta = 0.15$, $p < .01$) and market competitiveness ($\beta = 0.09$, $p < .05$), confirming that the macro-contextual landscape within which enterprises operate constitutes a substantive and independent determinant of sustainability performance over and above individual entrepreneurial behavior.

The full model (Model 3), which incorporated cross-level interaction terms between overall entrepreneurial orientation and each contextual moderator, yielded the best overall fit (deviance = 362.1) and explained 50% of Level-1 variance and 66% of Level-2 variance, representing a substantial and theoretically meaningful improvement over all preceding models. The statistically significant interaction between entrepreneurial orientation and access to finance ($\beta = 0.14$, $p < .01$) indicated that the positive effect of entrepreneurial orientation on sustainability performance was amplified in contexts where enterprises had better access to financial resources—consistent with resource-based theory (Barney, 1991) and with recent empirical evidence from African enterprise studies demonstrating that financial access acts as a critical enabling condition that converts entrepreneurial intent into tangible outcomes (Beck & Cull, 2014). The significant EO × institutional environment interaction ($\beta = 0.12$, $p < .01$) similarly revealed that enterprises operating in higher-quality institutional environments—characterized by stronger rule of law, regulatory predictability, and contract enforcement—derived greater sustainability returns from their entrepreneurial orientation, while those in weaker institutional contexts faced systematic dampening of the EO-sustainability relationship, suggesting that institutional development is not merely a background condition but an active moderating force in the African entrepreneurial sustainability nexus. The progressive reduction in Level-2 intercept variance from 0.112 in the null model to 0.038 in the full model confirmed that the included contextual variables explained the majority of between-country variance, while the remaining unexplained Level-1 residual variance (0.261) pointed to enterprise-specific idiosyncratic factors—such as leadership quality, organizational culture, and social capital—as promising avenues for future investigation.

Conclusion

This study generated robust, multi-level empirical evidence demonstrating that entrepreneurial orientation—particularly innovativeness and proactiveness—is a significant and positive driver of sustainability performance among African enterprises, while access to finance, institutional environment quality, and market competitiveness serve as critical contextual moderators that amplify or constrain the extent to which entrepreneurial behavior translates into meaningful economic, social, and environmental outcomes. Drawing on data from 200 enterprises across diverse African regions and sectors, and employing a rigorous analytical framework spanning descriptive, correlational, and hierarchical multilevel modeling techniques, the study established that sustainability in the African enterprise context is neither a product of entrepreneurial effort alone nor of contextual conditions in isolation, but rather emerges from the dynamic interaction between enterprise-level innovation and proactivity on one hand, and enabling macro-environmental conditions on the other—a finding that carries profound implications for how policymakers, development financiers, and enterprise support organizations conceptualize and structure interventions aimed at unlocking the sustainability potential of African entrepreneurship at scale.

Recommendations

Strengthen Financial Access Mechanisms Tailored to Sustainability-Oriented Enterprises. Given that access to finance emerged as the strongest contextual moderator of the entrepreneurial orientation–sustainability performance relationship, governments, development finance institutions, and impact investors across Africa should urgently design and scale blended finance instruments, green credit guarantees, and enterprise development funds specifically targeting sustainability-oriented SMEs. These mechanisms should be structured to reduce collateral requirements, lower borrowing costs, and provide patient capital that aligns with the longer return horizons inherent to social and environmental value creation, thereby releasing the full sustainability-generating potential of entrepreneurially active African firms.

Invest in Institutional Quality Reforms to Create an Enabling Regulatory Environment. The significant moderating effect of institutional environment quality on the EO–sustainability nexus underscores the urgent need for African governments and regional bodies such as the African Union and regional economic communities to prioritize regulatory reforms that enhance the predictability, transparency, and efficiency of business operating environments. Specific interventions should include the streamlining of business registration and licensing, strengthening of environmental compliance frameworks, and investment in anti-corruption infrastructure, collectively creating the institutional conditions under which entrepreneurial enterprises can confidently commit to long-term sustainability strategies without being undermined by governance failures and regulatory unpredictability.

Embed Sustainability and Innovation Competencies in Enterprise Development Programs. Since innovativeness was the strongest enterprise-level predictor of sustainability performance, business development service providers, incubators, accelerators, and vocational training institutions across Africa should systematically integrate sustainability-oriented innovation training into their enterprise development curricula. Programs should equip entrepreneurs with tools for identifying sustainability-linked market opportunities, developing green and socially responsive business models, measuring and reporting on triple-bottom-line performance, and building the adaptive organizational capabilities needed to sustain impact over time—ensuring that the next generation of African entrepreneurs enters the market with both the orientation and the competencies required to drive transformative, scalable, and enduring sustainability outcomes.

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