



PSYCHOLOGICAL CAPITAL AND NANO ENTERPRISE SUSTAINABILITY IN PLATEAU STATE, NIGERIA: THE MODERATING EFFECT OF ENTREPRENEURIAL ORIENTATION.

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ABSTRACT

This study examined the effect of Psychological Capital (PsyCap) on the sustainability of Nano-enterprises and investigated the moderating role of Entrepreneurial Orientation (EO) in this relationship. Guided by the Resource-Based View and Psychological Capital Theory, the study adopted a quantitative research design. Data were collected from 255 owners of Nano-enterprises in Plateau State, Nigeria, selected from a population of 2,912 using structured questionnaires. Structural Equation Modeling (SEM) was used to analyze the data and test the study's hypotheses. The findings revealed that Psychological Capital had a significant positive effect on the sustainability of Nano-enterprises. However, Entrepreneurial Orientation did not significantly moderate the relationship between Psychological Capital and sustainability. The study concludes that Psychological Capital is a critical driver of Nano-enterprise sustainability, while Entrepreneurial Orientation exerts an independent rather than a moderating influence. It is recommended that programs aimed at enhancing the sustainability of Nano-enterprises should prioritize the development of owners' psychological capital, given its significant positive influence on enterprise sustainability. Although entrepreneurial orientation did not significantly moderate the relationship between psychological capital and sustainability, it should still be promoted as an independent capability that contributes to enterprise sustainability.

Keywords: Psychological Capital, Entrepreneurial Orientation, Sustainability, Nano-enterprises.

1.0 INTRODUCTION

1.1 Background to the Study

Nano enterprises constitute a vital component of entrepreneurial activity within the global economy, particularly in developing countries where formal employment opportunities are limited. These enterprises increasingly provide income, generate employment, reduce poverty, and create livelihood opportunities for millions of individuals, especially women, youth, and low-income households who depend on self-employment for survival (World Bank, 2022; OECD, 2023; Urban & Kanguwe, 2024; Mehmood et al., 2026). Nano enterprises are generally characterized by small capital bases, informal operational structures, and owner-managed businesses with few employees (Ngo & Vu, 2025). Global studies indicate that Nano enterprises



are highly exposed to market volatility, financial constraints, and environmental shocks, resulting in high risks of business failure (OECD, 2023; Hernández-Perlines et al., 2023).

Across Africa, the sustainability of Nano enterprises is further constrained by weak infrastructure, unstable policy environments, limited access to finance, and inadequate business support systems (AfDB, 2023; GEM, 2023). Despite accounting for the majority of entrepreneurial activity on the continent, reports suggest that over 70% fail to achieve continuity beyond three to five years. (AfDB, 2023) These outcomes have been associated not only with external environmental pressures but also with entrepreneurs' limited capacity to withstand stress, recover from setbacks, and respond proactively to changing business conditions (Newman et al., 2023; Rauch et al., 2023).

In Nigeria, Nano enterprises dominate the informal and semi-formal sectors, significantly contributing to local economic activities. Despite their economic importance, sustainability outcomes remain poor, with national surveys indicating that approximately 80% of Nano and Micro enterprises fail within their first three years of operation (SMEDAN, 2022; Dayo-Adetiloye, 2022; Urban & Kanguwe, 2024). These failure rates reflect the combined effects of infrastructural deficits, inflationary pressures, insecurity, and limited access to finance, alongside internal challenges such as weak adaptability, low strategic orientation, weak managerial capabilities, and limited psychological capacity among enterprise owners (Akinwale et al., 2023; Ogunyemi et al., 2024). This has become a major concern for researchers, policymakers, and development practitioners.

In Plateau State, these enterprises are commonly engaged in petty trading, agribusiness, transportation, and artisanal activities, operating within volatile business environments. In such contexts, enterprise sustainability depends largely on the entrepreneur's ability to remain resilient, adaptable, and strategically proactive in the absence of strong institutional support. Consequently, attention has increasingly shifted from reliance on external resources alone toward the examination of internal resources possessed by Nano entrepreneurs, which may play a decisive role in sustaining business operations. Understanding how these internal capacities influence sustainability has therefore become essential for explaining why some Nano enterprises survive while others fail (Tang, 2020; Awuzie & Okoro, 2024).

Psychological capital represents one of the critical internal resources influencing Nano enterprise sustainability. Psychological capital refers to an individual's positive psychological state, reflected in confidence to perform tasks (self-efficacy), perseverance toward goals (hope), positive expectations about future outcomes (optimism), and the ability to recover from adversity and setbacks (resilience) (Luthans et al., 2021). Empirical studies show that Nano entrepreneurs with higher psychological capital are more likely to persist, effectively manage uncertainty, demonstrate adaptability, and sustain their enterprises under challenging conditions (Huang et al., 2022; Zhang et al., 2023).

However, psychological capital alone may not automatically result in sustainable enterprise outcomes unless it is effectively translated into entrepreneurial behaviour (Kantur et al., 2022),



thereby drawing attention to entrepreneurial orientation. Studies indicate that entrepreneurial orientation enhances opportunity recognition, innovation, adaptability, and competitive responsiveness, thereby improving sustainability prospects in resource-constrained environments (Rauch et al., 2023; Hernández-Perlines et al., 2023). Recent research further suggests that entrepreneurial orientation may moderate the relationship between psychological capital and sustainability by shaping how psychological strengths are converted into strategic decisions and actions (Kantur et al., 2022; Rauch et al., 2023).

Despite the increasing global literature on psychological capital, entrepreneurial orientation, and sustainability, limited empirical studies have focused specifically on Nano enterprises within the Nigerian context, particularly those operating in economically vulnerable regions such as Plateau State. Furthermore, many Nigerian studies on enterprise sustainability emphasize financial access, government support, and entrepreneurial skills while paying limited attention to the psychological and strategic dimensions of entrepreneurship. This creates important empirical and contextual gaps in the entrepreneurship literature.

The study therefore seeks to examine the effect of psychological capital and entrepreneurial orientation on the sustainability of nano enterprises in Plateau State, Nigeria.

1.2 Statement of the Problem

Despite their economic importance, sustainability outcomes among Nano enterprises remain poor, with reports indicating that about 80% fail within their first three years of operation (SMEDAN, 2022; Dayo-Adetiloye, 2022). The continued failure of Nano enterprises has serious economic and social consequences, including rising unemployment, declining household income, increased poverty, reduced local economic activities, and weakened community economic stability. Existing studies have largely attributed these failures to external factors such as inadequate infrastructure, limited access to finance, regulatory challenges, and economic instability (Akinwale et al., 2023; Ogunyemi et al., 2024). However, enterprises operating under similar environmental conditions often experience different survival outcomes, suggesting that internal entrepreneurial factors may also influence sustainability (Rauch et al., 2023).

Recent studies have emphasized psychological capital as an important internal resource that may enhance entrepreneurs' ability to cope with uncertainty and sustain business operations. Nevertheless, empirical evidence on the influence of psychological capital on Nano enterprise sustainability in Nigeria, particularly in Plateau State, remains limited. Furthermore, studies suggest that psychological capital may not automatically translate into sustainable outcomes unless supported by entrepreneurial orientation, which shapes innovative, proactive, and risk-taking behaviours (Kantur et al., 2022; Covin et al., 2021). Despite these assertions, limited studies have examined the moderating role of entrepreneurial orientation in the relationship between psychological capital and sustainability among Nano enterprises in Nigeria and, by extension, Plateau State, thereby creating an important empirical gap that necessitates this study.



1.3 Research Objectives

The study has the following objectives:

1. To assess the effect of psychological capital on the sustainability of Nano-enterprises in Plateau State.
2. To analyze the effect of entrepreneurial orientation on the sustainability of Nano-enterprises.
3. To evaluate the moderating role of entrepreneurial orientation in the relationship between psychological capital and Sustainability of Nano-enterprises.

1.4 Research Hypotheses

The study is anchored on the following hypotheses, stated in null form:

1. **H0₁**: Psychological capital has no significant effect on the sustainability of Nano-enterprises in Plateau State.
2. **H0₂**: Entrepreneurial orientation has no significant effect on the sustainability of Nano-enterprises.
3. **H0₃**: Entrepreneurial orientation does not significantly moderate the relationship between psychological capital and the sustainability of Nano-enterprises.

2.0 LITERATURE REVIEW

2.1 Conceptual Review

Psychological Capital (PsyCap)

Psychological Capital (PsyCap) has emerged as a crucial psychological construct in entrepreneurship research, representing an individual's positive psychological state of development, comprised of self-efficacy, hope, optimism, and resilience (Avey et al, 2009; Luthans et al, 2021). PsyCap emphasizes internal psychological resources that enable entrepreneurs to adapt, innovate, and persist in uncertain environments. Entrepreneurs with high levels of PsyCap are better able to pursue opportunities proactively, take calculated risks, and maintain operations under volatility, thereby promoting the sustainability of their ventures (Zaman et al, 2025).

The influence of PsyCap is evident in its individual dimensions, which work together to enhance entrepreneurial capabilities. Self-efficacy, defined as the belief in one's ability to execute tasks successfully (Bandura, 1997), equips entrepreneurs with the confidence to act decisively despite scarce resources, enabling engagement in innovative practices and proactive opportunity-seeking that are central to entrepreneurial orientation (Gao et al, 2020; Chen et al, 2023). Complementing this, hope provides entrepreneurs with both agency and pathways thinking, allowing them to identify alternative strategies and maintain persistence when faced with setbacks.

Similarly, optimism reinforces these capacities by shaping how entrepreneurs interpret uncertainty and challenges. Entrepreneurs with high optimism view setbacks as temporary and



manageable, sustaining motivation and encouraging proactive, innovative, and risk-taking behaviors that align with entrepreneurial orientation (Carver et al, 2010; Gao et al., 2020). This forward-looking perspective not only strengthens business decision-making but also buffers against stress, ensuring psychological well-being and sustained engagement. In parallel, resilience equips entrepreneurs to recover from adversity, adapt strategies, and maintain performance even under significant environmental pressures (Masten, 2021; Wang et al, 2023). The ability to learn from failures and persist despite obstacles supports both operational continuity and stakeholder confidence, which are critical to the sustainability of Nano enterprises (Öztürk et al., 2024).

Entrepreneurial Orientation

Entrepreneurial Orientation (EO) has emerged as a central construct in entrepreneurship research, providing a framework to understand how firms engage in innovative, proactive, competitive aggressiveness, autonomy and risk-taking behaviors that enable them to identify and exploit opportunities in competitive markets (Covin et al, 2019: 2021). Entrepreneurial Orientation reflects a firm's strategic posture and decision-making tendencies, encompassing innovativeness, proactiveness, and risk-taking as core dimensions, with autonomy and competitive aggressiveness often included depending on the context (Lumpkin & Dess, 1996; Baskoro et al., 2022). Entrepreneurial Orientation is relevant to Nano-enterprises which often lack financial capital, formal managerial systems, and institutional support but remain vital for economic development. It enables entrepreneurs to convert limited resources into competitive strategies, fostering innovation, anticipating opportunities, and balancing risks to ensure sustainability (Chen et al., 2023).

Innovativeness, the core of EO, reflects a firm's capacity to support creativity, experimentation, and novel solutions in products, services, and processes (Lumpkin & Dess, 1996). For Nano-enterprises, innovativeness often emerges through frugal strategies and incremental improvements, enabling differentiation under resource constraints (Baskoro et al., 2022; Biswas, 2024). Strategic, process, and digital innovativeness allow these firms to reconfigure materials, redesign operations, and adopt digital tools for market expansion and efficiency (Gao, et al., 2020; Chen et al., 2023; Usman, 2024). Importantly, innovativeness is closely linked to psychological capital, as entrepreneurs with high levels of hope, self-efficacy, optimism, and resilience are more willing to experiment and view challenges as opportunities for creative problem-solving (Zaman et al., 2025). In addition, proactiveness captures a forward-looking posture, where firms anticipate market needs and act early to seize opportunities (Lumpkin & Dess, 1996; Covin & Wales, 2019). For Nano-enterprises, proactiveness is expressed through informal market scanning, community networking, and rapid adaptation to emerging consumer preferences, often compensating for the absence of formal strategic planning (Ifeanyi et al., 2025; Biswas, 2024). Furthermore, proactive behavior aligns with sustainability goals by enabling early adoption of environmentally responsible and socially relevant practices (Teshome et al., 2024; Öztürk et al., 2024). Psychological capital further enhances proactiveness, as hopeful and optimistic entrepreneurs are more likely to act decisively and seize opportunities, reinforcing the link between internal psychological resources and strategic behavior (Chen et al., 2023; Zaman et al., 2025).



Similarly, risk-taking represents the willingness to engage in uncertain ventures that may yield high rewards or potential losses (Lumpkin & Dess, 1996; Covin & Wales, 2019; 2021). Entrepreneurs adopt small-scale but meaningful risks, such as diversifying suppliers, experimenting with products, or embracing digital platforms, which cumulatively affect growth and sustainability (Biswas, 2024; Ifeanyi et al., 2025). Psychological capital supports risk-taking by enhancing confidence, resilience, and optimism, allowing entrepreneurs to tolerate uncertainty and pursue ambitious goals (Chen et al., 2023; Zaman et al., 2025). Additionally, Autonomy captures the freedom to make independent decisions, fostering rapid adaptation and first-mover advantages, while competitive aggressiveness emphasizes assertive strategies to secure market share, such as targeted marketing, price positioning, and fast-follower strategies (Lumpkin & Dess, 1996; Covin & Wales, 2019; Baskoro et al., 2022; Weng et al., 2024).

Sustainability of Nano-Enterprises

Sustainability has become a major concern in entrepreneurship and business management literature because of increasing economic uncertainty, environmental challenges, and competitive pressures affecting businesses globally (Finnerty et al., 2026; Hanaysha & Al-Shaikh, 2024). Business sustainability generally refers to the ability of an enterprise to survive, remain competitive, adapt to environmental changes, and continuously generate economic and social value over time (Ngo & Vu, 2025). The sustainability of Nano-enterprises can further be referred to as their capacity to continue operations, remain competitive, and contribute to socio-economic and environmental goals over the long term despite severe resource and institutional constraints (Ma et al, 2025). Sustainable enterprises are capable of balancing economic performance, social responsibility, and environmental considerations while maintaining long-term operational continuity (Sisodia & Jan, 2022).

Sustainability embodies a holistic framework for business survival and growth. It integrates financial viability, social responsibility, and environmental consciousness while being heavily influenced by entrepreneurial behavior and psychological capital. For Nano-enterprises, sustainability determines not only their longevity but also their capacity to contribute meaningfully to local and global development agendas. While the concept of sustainability is universal, its application within Nano-enterprises is unique due to their size, structure, and operating environment. Nano-enterprises are the smallest category of businesses, typically characterized by fewer than five employees, low capitalization, and high reliance on informal systems (Biswas, 2024). Their contribution to local economies is significant, providing livelihoods, reducing poverty, and enhancing community resilience; yet, their sustainability is precarious, as many struggle to survive beyond a few years (Usman et al, 2024). For these businesses, sustainability extends beyond profitability and requires balancing economic survival, social legitimacy, and environmental responsibility (Sati et al., 2025). Unlike larger firms that can institutionalize sustainability through corporate policies, Nano-enterprises depend largely on the entrepreneur's personal attributes, community ties, and adaptive strategies to remain viable (Awuzie, et al., 2024). Economic sustainability often involves resource-constrained innovation, flexible pricing, and diversification of products or services to withstand market shocks, while social sustainability relies on trust with customers, strong community networks, and stakeholder engagement (Sati et al., 2025). Environmental sustainability, though limited in scale, manifests



through small but impactful practices such as recycling, waste reduction, or adoption of environmentally friendly packaging (Weng et al., 2024).

2.1 THEORETICAL REVIEW

2.1.1 Resource-Based View (RBV) Theory

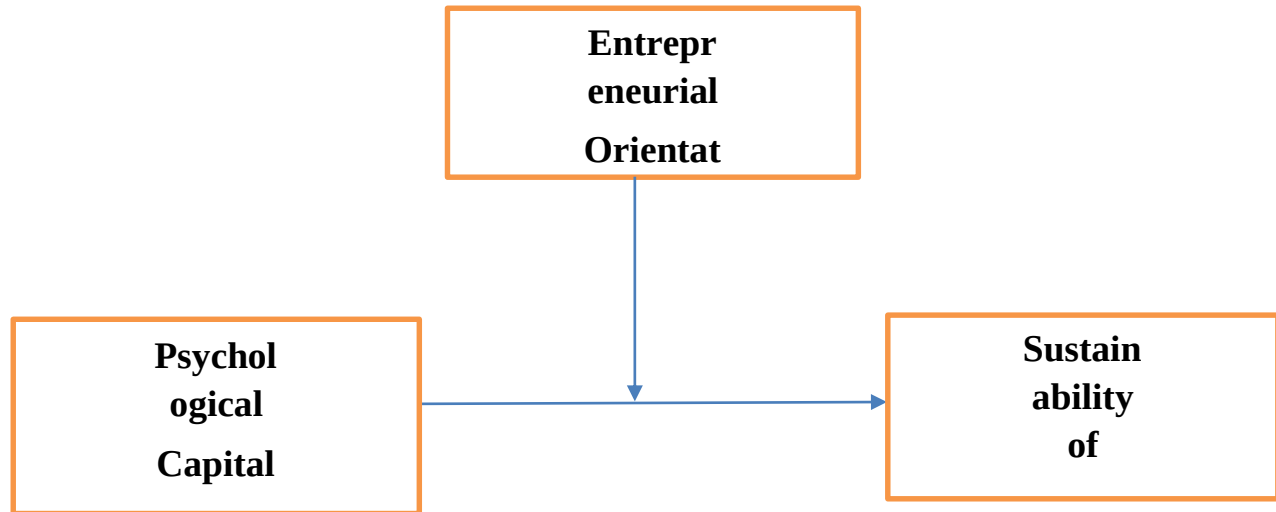
The theory that underpins this study is the Resource-Based View (RBV) propounded by Wernerfelt (1984) and later refined by Barney (1991). Who argued that firms attain sustained competitive advantage when they possess and effectively deploy resources that are valuable, rare, inimitable, and non-substitutable (VRIN). Resource Based View theory has expanded beyond tangible assets to incorporate intangible resources, including knowledge, skills, capabilities, routines, and human-related attributes (Barney, Ketchen, & Wright, 2021). In Nano enterprises, particularly in resource-constrained environments, internal resources are often limited and unevenly distributed. As a result, sustainability outcomes depend heavily on how entrepreneurs identify, mobilize, and recombine available resources to achieve economic viability, social relevance, and environmental responsibility (Martins & Rialp, 2023). Entrepreneurs who possess distinctive internal resources such as experiential knowledge, adaptive capabilities, social relationships, and psychological strengths are better positioned to pursue sustainable business practices.

2.1.2 Psychological Capital Theory

With Psychological Capital (PsyCap) theory serving as a supporting theory emerged from the positive organizational behavior literature developed by Luthans, Youssef, and Avolio (2004, 2007) it explains how the psychological attributes of nano-enterprise owners enhance the effectiveness of firm-level resources emphasized by Resource Based View. For instance, self-efficacy strengthens entrepreneurs' confidence to deploy limited resources innovatively; hope supports long-term planning and pathway thinking; resilience enables recovery from economic or environmental shocks; and optimism sustains commitment to social and environmental goals despite short-term constraints (Ugwu & Oputa, 2023; Yonla et al., 2024). These psychological capacities enrich the internal resource pool of nano enterprises and improve the entrepreneurs' ability to convert scarce resources into sustainable outcomes.



2.2 CONCEPTUAL FRAMEWORK



2.3 EMPIRICAL REVIEW

Psychological Capital and Sustainability of Nano-Enterprises

Studies have been conducted by scholars across the globe using quantitative research designs to examine the effect of psychological capital on the sustainability of Nano enterprises. These studies consistently conceptualize psychological capital as a higher-order construct comprising hope, self-efficacy, resilience, and optimism, and sustainability as the ability of enterprises to maintain continuity, adaptability, and long-term viability under conditions of uncertainty. Chen, Wang, and Li (2023) examined the effect of psychological capital on sustainable business performance among micro-scale enterprises in China using a quantitative survey design and multiple regression analysis. The findings revealed that psychological capital has a significant positive effect on sustainability ($\beta = 0.37$, $p < 0.001$), with resilience ($\beta = 0.31$, $p < 0.001$) and optimism ($\beta = 0.22$, $p < 0.05$) emerging as key influencing dimensions. The study concluded that psychological capital enhances entrepreneurs' adaptive capacity and long-term orientation, which are essential for sustaining small businesses in volatile environments.

In Nigeria, Ojeleye and Mustapha (2025) tested the relationship between psychological capital and sustainable performance of SMEs in Nigeria. Using a survey and cross-sectional research design, data were obtained from 333 SME operators and analyzed using structural equation modelling. The findings revealed that psychological capital had a positive and significant influence on sustainable performance, underscoring the critical role of psychological resources in building businesses that can adapt to changing environments and withstand the test of time. Though the study's broad focus on SMEs did not specifically examine Nano enterprises, which often operate with more limited resources and face distinct survival challenges.



Liana et al. (2026) provide a contrasting empirical perspective on the relationship between psychological capital and sustainable performance of MSMEs. Using a quantitative research design and PLS-SEM based on data from 105 MSME owners in Indonesia, the study found that psychological capital has a negative and insignificant relationship with sustainable performance, indicating that PsyCap does not significantly contribute to MSME sustainability outcomes in the sampled context. This contradicts findings from several other studies that report a positive influence of psychological capital on sustainable performance, suggesting that the effect of PsyCap on sustainability may not be uniform across different contexts. Although the study did not focus exclusively on Nano-enterprises, the findings highlight the critical role of PsyCap in sustaining very small businesses operating under severe constraints.

The mixed empirical evidence is largely suggestive of a positive relationship between psychological capital and enterprise sustainability, although some studies indicate that the relationship may be context-dependent and not always statistically significant. According to Yonla, et al (2024) and Yonla et al (2018) established that, the psychological elements including self-efficacy, optimism, hope and resilience have impact and significance positive influence on the self-employment of individuals graduates in Nigeria. This means, that individuals with self believe and overcoming ability, are always aspiring for better tomorrow. Similarly, Yonla, et al (2019) also said that positive psychological capital is a good determinant for the self-employment of graduates in Nigeria. This suggest that individuals with a positive mindset, are motivated by their drive to make the negative to become positive this is the issue of an individual mindset. Additionally, Yonla, et al (2018) believe that, the combine approaches of psychological capital and self-starting behaviour, is a better constructs to explain Nano-enterprise and self-employment among graduates. This clearly, articulate the fact that, individual positive mindset has a lot to do with what he/she can achieve in life. Hence, self-starting behaviour is the ability of an individual to be seen doing a business activity without anyone instructing him/her. So, the two construct makes it a better influence on the individual business activity.

Entrepreneurial Orientation and Sustainability of Nano-Enterprises

Empirical research examining entrepreneurial orientation (EO) and sustainability of Nano-enterprises has predominantly adopted quantitative research designs, reflecting the need to empirically test the strategic behaviors that enable very small firms to survive and grow in volatile environments. Entrepreneurial Orientation, commonly operationalized through innovativeness, proactiveness, and risk-taking, has been empirically linked to enterprise sustainability by enhancing adaptability, opportunity recognition, and strategic responsiveness.

Weng, Xu, Shi, and Qian (2024) conducted a quantitative cross-sectional study among Small and Nano-scale enterprises in selected Asian economies to examine the effect of entrepreneurial orientation on sustainability outcomes. Data were collected using structured questionnaires and analyzed using structural equation modeling (SEM). The findings revealed that entrepreneurial orientation had a significant positive effect on enterprise sustainability. Further analysis showed that innovativeness and proactiveness were stronger predictors of sustainability than risk-taking.



The study concluded that Nano-enterprises that consistently introduce new ideas and proactively respond to market changes are more likely to achieve long-term sustainability.

Usman and Male (2024) examined Nano-enterprises in Nigeria using a quantitative research design and partial least squares structural equation modeling (PLS-SEM). The study tested the influence of entrepreneurial orientation on enterprise sustainability. The results showed that entrepreneurial orientation had a significant positive effect on sustainability. Among the dimensions of entrepreneurial orientation, proactiveness and innovativeness emerged as key factors influencing sustainability outcomes. The findings suggest that Nano-enterprise owners who anticipate market trends and act ahead of competitors are more likely to sustain their businesses over time.

Amaleshwari and Jeevitha (2025) provide contrasting empirical evidence on the relationship between entrepreneurial orientation and sustainability. Using a quantitative survey design, the study collected data from 363 firms affiliated with the Madras Chamber of Commerce in India through structured questionnaires and analyzed the data to test the hypothesized relationships. The findings revealed that entrepreneurial orientation did not have a direct significant influence on sustainable business performance; however, it positively contributed to sustainability outcomes through circular business practices. The implication of this is that entrepreneurial orientation alone may not automatically translate into sustainable performance except when supported by appropriate strategic practices that enable businesses to adapt and achieve long-term viability.

Empirical evidence largely suggests that entrepreneurial orientation contributes to Nano-enterprise sustainability; however, the contrasting findings indicate that EO may not independently guarantee sustainability outcomes.

Moderating Role of Entrepreneurial Orientation on Psychological Capital and Sustainability of Nano-Enterprises

Sung and Park (2018) investigated the moderating effect of entrepreneurial orientation on the relationship between sustainability orientation and sustainable entrepreneurial intention in South Korea. The study employed a cross-sectional survey design and collected data from 215 respondents. Data were collected using structured questionnaires measured on a 7-point Likert scale and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 2.0. The findings revealed that entrepreneurial orientation significantly moderated the relationship between sustainability orientation and entrepreneurial intention. Individuals with higher entrepreneurial orientation translated sustainability values into entrepreneurial intentions more effectively than those with lower entrepreneurial orientation. Although the study confirmed the contingency role of entrepreneurial orientation, it focused on entrepreneurial intention rather than psychological capital or enterprise sustainability.

Ibidunni et al (2018) investigated the moderating effect of entrepreneurial orientation on the relationship between entrepreneurial competencies and the performance of agro-based SMEs in



Lagos State, Nigeria. The study employed a survey research design involving 230 SME managers, while hierarchical multiple regression was used for data analysis. The findings revealed that entrepreneurial competencies significantly improved firm performance. More importantly, entrepreneurial orientation significantly moderated the relationship between entrepreneurial competencies and firm performance. Specifically, the dimensions of innovativeness, proactiveness, and autonomy strengthened the positive influence of entrepreneurial competencies on SME performance. The study concluded that entrepreneurial orientation serves as a strategic capability that enhances the conversion of entrepreneurial resources into superior organizational outcomes. However, the study focused on entrepreneurial competencies rather than psychological capital and measured firm performance instead of sustainability, thereby creating room for further investigation.

Empirical Gap

Despite these advances, no verified empirical study was identified that examines entrepreneurial orientation as a moderator of the relationship between psychological capital and enterprise sustainability, particularly among Nano enterprises. Existing moderation studies primarily focus on the entrepreneurial orientation–performance relationship rather than on whether entrepreneurial orientation strengthens or weakens the influence of entrepreneurs' psychological resources (hope, resilience, optimism, and self-efficacy) on enterprise sustainability. Furthermore, most studies were conducted in large firms or SMEs in Asia, Europe, and developed economies, with limited evidence from Nano enterprises in Nigeria. This gap provides strong empirical justification for the study.

3.0 METHODOLOGY

This study adopted a quantitative research design, specifically a cross-sectional survey approach. A quantitative approach is appropriate because it allows the researcher to measure relationships between variables numerically and test hypotheses objectively. A cross-sectional survey involves collecting data from respondents at a single point in time, which is particularly suitable for assessing the psychological capital and the moderating role of entrepreneurial orientation on the sustainability of Nano-enterprises in Plateau State. The unit of analysis used is Nano Enterprises and unit of enquiry is the owners Nano enterprises who are the target population for this study. According to Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2021), there are approximately 2,912 Nano-enterprises operating in Plateau State. The study sample was drawn from the population of registered and unregistered Nano enterprises across Plateau State. To determine the sample size, random sampling technique was adopted in this study to ensure that every Nano enterprise within the study population had an equal and known chance of being selected. This sampling technique minimizes selection bias and enhances the representativeness of the sample, thereby improving the credibility and the generalization of the study findings (Sauders et al., 2023). Applying this, yields a sample size of about 255 respondents.

The study employed a structured questionnaire as the primary instrument for data collection, using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).



Construct validity was established through confirmatory factor analysis by ensuring that factor loadings exceeded 0.70 and the Average Variance Extracted (AVE) was greater than 0.50, confirming that the measurement items adequately represented their respective constructs. Reliability was assessed using Cronbach's alpha and composite reliability, with values above the recommended threshold of 0.70 indicating satisfactory internal consistency. In addition, statistical remedies, including full collinearity tests, were applied during data analysis to detect and address potential common method bias.

The data collected in this study was analyzed using both descriptive and inferential statistical techniques. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used initially to summarize the demographic and enterprise-related characteristics of the respondents. This step is necessary to provide an overview of the sample composition and to highlight the distribution of key variables such as age, education, firm size, and sector (Saunders et al., 2019).

For inferential analysis, the study employed Structural Equation Modeling (SEM) using JASP, Jamovi and AMOS software as the primary analytical technique. Structural Equation Modeling (SEM) is appropriate for this research for several reasons. First, it is well-suited for testing complex models with multiple latent variables and moderating effects, as is the case with psychological capital, entrepreneurial orientation, and sustainability (Hair et al., 2021). Additionally, it is robust to non-normal data distributions and works well with relatively small to medium sample sizes, which is often the case in field studies involving informal enterprises (Kock & Hadaya, 2020). Finally, Structural Equation Modeling (SEM) allows simultaneous assessment of measurement models (validity and reliability of constructs) and structural models (hypothesized relationships), making it a comprehensive tool for hypothesis testing (Sarstedt et al., 2022).



4.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 DEMOGRAPHIC STATISTICS OF RESPONDENTS

Gender				
Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	125	49.0	49.0	49.0
Female	130	51.0	51.0	100.0
Age				
Age	Frequency	Percent	Valid Percent	Cumulative Percent
18–25	27	10.6	10.6	10.6
26–35	44	17.3	17.3	27.8
36–45	94	36.9	36.9	64.7
46–55	62	24.3	24.3	89.0
56+	28	11.0	11.0	100.0
Educational Qualification				
Educational Qualification	Frequency	Percent	Valid Percent	Cumulative Percent
None	12	4.7	4.7	4.7
Primary	31	12.2	12.2	16.9
Secondary	91	35.7	35.7	52.5
Tertiary	121	47.5	47.5	100.0
Types of Business				
Type of Business	Frequency	Percent	Valid Percent	Cumulative Percent
Trade	43	16.9	16.9	16.9
Service	46	18.0	18.0	34.9
Agriculture	86	33.7	33.7	68.6
Craft/Artisan	44	17.3	17.3	85.9
Others	36	14.1	14.1	100.0
Years in Business				
Years in Business	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 1	24	9.4	9.4	9.4
1 – 3 years	33	12.9	12.9	22.4
4 – 6 years	90	35.3	35.3	57.6
7 – 10 years	60	23.5	23.5	81.2
10 and above	48	18.8	18.8	100.0

Source: Field Survey, 2025

The gender distribution shows a nearly equal representation of respondents, with 51.0% female and 49.0% male, indicating a balanced sample. This balance adds value to the data by minimizing gender bias and enhancing the representativeness of the findings, thereby strengthening the credibility and generalizability of the study's results on Nano-enterprise sustainability.



The age distribution shows that most respondents are in the 36 to 45 years (36.9%) and 46 to 55 years (24.3%) age groups. This indicates a largely active and experienced entrepreneurial population. The age structure enhances the data's value by ensuring that responses primarily come from individuals with substantial business experience. As a result, this increases the reliability of insights regarding psychological capital, entrepreneurial orientation, and the sustainability of Nano-enterprises.

The educational qualification distribution shows that a substantial proportion of respondents possess secondary (35.7%) and tertiary education (47.5%), indicating a relatively educated sample of Nano-entrepreneurs. This adds value to the data by enhancing respondents' capacity to understand and accurately respond to the questionnaire, thereby improving the reliability and validity of the study's findings

The distribution of business types reveals that agriculture (33.7%) makes up the largest share of Nano-enterprises, followed by services, crafts and artisan activities, and trade. This diversity enriches the data by ensuring a broad representation of sectors, which strengthens the applicability of the findings across various types of Nano-enterprises and enhances the generalizability of the study's conclusions.

The distribution for years in business shows that the majority of Nano-enterprises (77.6%) have been in business for four years or more, with the largest segment (35.3%) operating for 4 to 6 years. Only 9.4% are very new, having been in operation for less than one year. This indicates that the sample of established businesses is relatively mature, making it suitable for studying sustainability outcomes.

Descriptive Statistics

	Sustainability	E O	PSY
Median	4.167	4.040	4.188
Mean	4.083	3.994	4.102
Std. Deviation	0.601	0.549	0.580
MAD robust	0.371	0.400	0.426
Skewness	-2.105	-2.193	-2.511
Std. Error of Skewness	0.153	0.153	0.153
Kurtosis	6.579	8.108	9.573
Std. Error of Kurtosis	0.304	0.304	0.304
Shapiro-Wilk	0.825	0.830	0.789
P-value of Shapiro-Wilk	< .001	< .001	< .001
Minimum	1.167	1.150	1.063
Maximum	5.000	4.820	5.000



The descriptive statistics reveal that the sustainability of Nano-enterprises (Sustainability), entrepreneurial orientation (E.O), and psychological capital (PSY) all have high mean and median values, with values of approximately 4.0 and above. This suggests that respondents generally demonstrate strong psychological capital, a high entrepreneurial orientation, and favorable sustainability practices. The relatively low standard deviations indicate limited variation around the means, implying consistency in the respondents' perceptions. The negative skewness values show that responses are clustered toward the higher end of the scale, reflecting predominantly positive attitudes and behaviors among Nano-entrepreneurs. Although the Shapiro–Wilk test indicates non-normality ($p < .001$), the Structural Equation Modeling (SEM) employs Maximum Likelihood Robust (MLR) estimation, which provides corrected standard errors and chi-square values. This approach is acceptable given the large sample size and the adoption of robust, SEM-based estimation techniques in the study.

Model Fit Indices for Psychological Capital

Fit indices

Index	Value
Comparative Fit Index (CFI)	0.939
Tucker-Lewis Index (TLI)	0.924
Bentler-Bonett Non-normed Fit Index (NNFI)	0.924
Bentler-Bonett Normed Fit Index (NFI)	0.905
Parsimony Normed Fit Index (PNFI)	0.724
Bollen's Relative Fit Index (RFI)	0.881
Bollen's Incremental Fit Index (IFI)	0.940
Relative Noncentrality Index (RNI)	0.939
Goodness of fit index (GFI)	0.901
Root mean square error of approximation (RMSEA)	0.078
RMSEA p-value	2.578×10^{-4}

The measurement model for psychological capital demonstrates an acceptable to good overall fit, indicating that the items used adequately represent the construct. The Comparative Fit Index (CFI = 0.939), Tucker–Lewis Index (TLI = 0.924), Non-Normed Fit Index (NNFI = 0.924), Incremental Fit Index (IFI = 0.940), Relative Non centrality Index (RNI = 0.939), and Normed Fit Index (NFI = 0.905) all exceeded the recommended threshold of 0.90, confirming a strong incremental and comparative model fit. The Goodness of Fit Index (GFI = 0.901) also meets the acceptable criterion, suggesting that the model explains a substantial proportion of the variance in the observed data. The Parsimony Normed Fit Index (PNFI = 0.724) indicates that the model



achieves a good balance between fit and parsimony. Although the Root Mean Square Error of Approximation (RMSEA = 0.078) is slightly below the upper acceptable limit of 0.08, it still indicates a reasonable error of approximation. Overall, these fit indices confirm that the items forming psychological capital provide a reliable and valid measurement model suitable for subsequent structural and hypothesis testing.

Parameter Coefficient Estimate

Factor loadings

Factor	Indicator	Estimate	Std. Error	z-value	P	95% Confidence Interval	
						Lower	Upper
Hope	HPE8	1.000	0.000			1.000	1.000
	HPE9	0.904	0.078	11.53	< .001	0.751	1.058
	HPE2	0.973	0.083	11.68	< .001	0.810	1.137
	HPE10	0.964	0.073	13.17	< .001	0.820	1.107
Resilience	RSI2	1.000	0.000			1.000	1.000
	RSI5	0.819	0.075	10.98	< .001	0.673	0.965
	RSI3	1.042	0.078	13.44	< .001	0.890	1.194
Optimism	OPM2	1.000	0.000			1.000	1.000
	OPM10	1.053	0.090	11.70	< .001	0.877	1.230
	OPM7	1.077	0.085	12.63	< .001	0.910	1.244
	OPM6	1.181	0.098	12.01	< .001	0.988	1.373
Self-Efficacy	SEF2	1.000	0.000			1.000	1.000
	SEF3	0.920	0.082	11.16	< .001	0.758	1.082
	SEF8	0.978	0.083	11.78	< .001	0.815	1.140
	SEF9	1.032	0.082	12.56	< .001	0.871	1.193

The factor loading results indicate that the items used to measure psychological capital load strongly and significantly onto their respective dimensions, confirming the robustness of the measurement model. For the hope dimension, all indicators (HPE8, HPE9, HPE2, and HPE10) exhibit high factor loadings. Specifically, HPE9, HPE2, and HPE10 have statistically significant z-values ($p < .001$) with confidence intervals that do not include zero, indicating strong convergence. Similarly, the resilience dimension is well represented, as indicators RSI5 and RSI3 demonstrate substantial and significant loadings, effectively capturing resilience among Nano-entrepreneurs. The optimism dimension also shows very strong factor loadings, with OPM10, OPM7, and OPM6 all exceeding a loading of one and exhibiting high z-values ($p < .001$), signifying a powerful contribution to the latent construct.



Furthermore, the self-efficacy dimension is reliably measured, with SEF3, SEF8, and SEF9 showing significant and strong loadings on the construct. The high magnitude of the factor loadings, their statistical significance, and the narrow confidence intervals confirm that the selected indicators are valid, reliable, and appropriate measures of psychological capital for Nano-enterprises in Plateau State.

Measurement Model for Entrepreneurial Orientation Fit Measures Entrepreneurial Orientation Variables

Fit indices

Index	Value
Comparative Fit Index (CFI)	0.924
Tucker-Lewis Index (TLI)	0.910
Bentler-Bonett Non-normed Fit Index (NNFI)	0.910
Bentler-Bonett Normed Fit Index (NFI)	0.864
Parsimony Normed Fit Index (PNFI)	0.736
Bollen's Relative Fit Index (RFI)	0.840
Bollen's Incremental Fit Index (IFI)	0.924
Relative Non centrality Index (RNI)	0.924
Root mean square error of approximation (RMSEA)	0.065
Goodness of fit index (GFI)	0.877

The measurement model for entrepreneurial orientation exhibits an acceptable overall fit, indicating that the observed indicators adequately represent the underlying construct. The Comparative Fit Index (CFI = 0.924), Tucker-Lewis Index (TLI = 0.910), Non-Normed Fit Index (NNFI = 0.910), Incremental Fit Index (IFI = 0.924), and Relative Non centrality Index (RNI = 0.924) all exceed the recommended threshold of 0.90, demonstrating a good comparative and incremental model fit. Although the Normed Fit Index (NFI = 0.864) and Relative Fit Index (RFI = 0.840) fall slightly below the conventional 0.90 benchmark, they remain within an acceptable range for complex models. The Parsimony Normed Fit Index (PNFI = 0.736) suggests that the model achieves a good balance between parsimony and explanatory power. In addition, the Root Mean Square Error of Approximation (RMSEA = 0.065) indicates a reasonable error of approximation, while the Goodness of Fit Index (GFI = 0.877) reflects an acceptable absolute fit.



Parameter Coefficient

Factor loadings

Factor	Indicator	Estimate	Std. Error	z-value	p	95% Interval	Confidence
						Lower	Upper
Innovation	INN2	1.000	0.000			1.000	1.000
	INN5	1.256	0.115	10.921	< .001	1.031	1.482
	INN6	1.062	0.105	10.105	< .001	0.856	1.269
	INN8	1.188	0.117	10.159	< .001	0.959	1.417
Proactiveness	PRO1	1.000	0.000			1.000	1.000
	PRO2	0.932	0.081	11.568	< .001	0.774	1.090
	PRO3	0.977	0.089	10.942	< .001	0.802	1.152
	PRO7	1.017	0.088	11.616	< .001	0.845	1.188
Risk taking	RT1	1.000	0.000			1.000	1.000
	RT3	1.258	0.135	9.311	< .001	0.993	1.522
	RT4	1.226	0.165	7.442	< .001	0.903	1.548
	RT5	1.028	0.114	9.043	< .001	0.805	1.250
	RT6	1.087	0.119	9.156	< .001	0.855	1.320
Autonomy	AU2	1.000	0.000			1.000	1.000
	AU4	1.090	0.119	9.135	< .001	0.856	1.323
	AU5	0.956	0.108	8.833	< .001	0.744	1.168
	AU6	1.110	0.117	9.466	< .001	0.881	1.340
competitive aggression	CA2	1.000	0.000			1.000	1.000
	CA4	0.902	0.074	12.146	< .001	0.757	1.048
	CA6	0.920	0.082	11.245	< .001	0.760	1.080
	CA8	0.799	0.079	10.049	< .001	0.643	0.955

The factor loading results for entrepreneurial orientation shows that all indicators load strongly and significantly on their respective dimensions, confirming the validity and reliability of the measurement model. For the innovation dimension, INN5, INN6, and INN8 exhibit high and statistically significant loadings ($p < .001$), demonstrating that the items effectively capture innovative behavior among Nano-entrepreneurs. The proactiveness dimension is also well represented, as PRO2, PRO3, and PRO7 record strong and significant factor loadings, reflecting



the tendency of entrepreneurs to anticipate and act on market opportunities. Similarly, the risk-taking dimension shows robust measurement, with RT3, RT4, RT5, and RT6 displaying high and significant loadings ($p < .001$), indicating a willingness to commit resources under uncertainty. The autonomy dimension is reliably measured by AU4, AU5, and AU6, all of which load significantly on the construct, highlighting independent decision-making and initiative in enterprise operations. Finally, the competitive aggressiveness dimension demonstrates strong loadings through CA4, CA6, and CA8, signifying the ability of Nano-enterprises to respond assertively to competitive pressures. Overall, the magnitude, statistical significance, and confidence intervals of the factor loadings confirm that the selected indicators are appropriate, valid, and reliable measures of entrepreneurial orientation among Nano-enterprises in Plateau State, supporting their use in subsequent structural and moderation analyses.

Measurement Model for Sustainability of Nano Enterprises

Model Fit Indices

Fit indices

Index	Value
Comparative Fit Index (CFI)	0.953
Tucker-Lewis Index (TLI)	0.939
Bentler-Bonett Non-normed Fit Index (NNFI)	0.939
Bentler-Bonett Normed Fit Index (NFI)	0.923
Parsimony Normed Fit Index (PNFI)	0.713
Bollen's Relative Fit Index (RFI)	0.900
Bollen's Incremental Fit Index (IFI)	0.953
Relative Non centrality Index (RNI)	0.953
Goodness of fit index (GFI)	0.927
Root mean square error of approximation (RMSEA)	0.074
RMSEA p-value	0.011
Standardized root mean square residual (SRMR)	0.043

The measurement model for the sustainability of Nano-enterprises shows a strong overall fit, indicating that the observed indicators effectively represent the underlying sustainability construct. The Comparative Fit Index (CFI = 0.953), Tucker-Lewis Index (TLI = 0.939), Non-Normed Fit Index (NNFI = 0.939), Incremental Fit Index (IFI = 0.953), Relative Non centrality Index (RNI = 0.953), and Normed Fit Index (NFI = 0.923) all exceed the recommended threshold of 0.90, confirming a robust comparative and incremental model fit.

Additionally, the Goodness of Fit Index (GFI = 0.927) and Relative Fit Index (RFI = 0.900) further support the adequacy of the model. The Parsimony Normed Fit Index (PNFI = 0.713)



indicates that the model strikes a satisfactory balance between explanatory power and simplicity. Furthermore, the Root Mean Square Error of Approximation (RMSEA = 0.074) and the Standardized Root Mean Square Residual (SRMR = 0.043) are within acceptable ranges, suggesting a reasonable error of approximation and good residual fit. However, these fit indices confirm that the sustainability measurement model is valid, reliable, and suitable for subsequent structural modeling and hypothesis testing.

Parameter Estimate

Factor loadings

Factor	Indicator	Estimate	Std. Error	z-value	P	95% Confidence Interval
						Lower Upper
Economic sustainability	ECSN3	1.000	0.000			1.000 1.000
	ECSN5	0.899	0.098	9.223	< .001	0.708 1.091
	ECSN7	0.987	0.085	11.678	< .001	0.822 1.153
	ECSN9	0.943	0.083	11.317	< .001	0.779 1.106
Social Sustainability	SSUS5	1.000	0.000			1.000 1.000
	SSUS7	1.623	0.171	9.483	< .001	1.287 1.958
	SSUS9	1.416	0.155	9.143	< .001	1.113 1.720
	SSUS11	1.324	0.144	9.222	< .001	1.043 1.606
Environmental Sustainability	EVSUS5	1.000	0.000			1.000 1.000
	EVSUS6	0.914	0.070	13.051	< .001	0.776 1.051
	EVSUS8	0.928	0.069	13.446	< .001	0.792 1.063
	EVSUS9	0.826	0.067	12.351	< .001	0.695 0.957

The factor loading results for the sustainability of Nano-enterprises indicate that all measurement items load strongly and significantly on their respective sustainability dimensions, confirming the adequacy of the measurement model. For economic sustainability, the indicators ECSN5, ECSN7, and ECSN9 exhibit high and statistically significant factor loadings ($p < .001$), with confidence intervals well above zero, demonstrating that these items reliably capture the economic stability and long-term financial viability of Nano-enterprises. The social sustainability dimension also shows very strong loadings, as SSUS7, SSUS9, and SSUS11 record high estimates with significant z-values ($p < .001$), reflecting the relevance of social responsibility, community engagement, and stakeholder relations in sustaining Nano-enterprises. Similarly, the environmental sustainability dimension is well represented, with EVSUS6,



EVSUS8, and EVSUS9 displaying strong and significant loadings ($p < .001$), indicating that environmentally responsible practices are an important component of sustainability among Nano-enterprises. Overall, the magnitude and significance of the factor loadings, together with confidence intervals that exclude zero, confirm that the indicators are valid and reliable measures of the sustainability dimensions of Nano-enterprises in Plateau State, making them suitable for further structural analysis and hypothesis testing.

Moderation Analysis

Model Summary

Model summary

	Hayes number ^a	AIC	AIC weight	BIC	BIC weight	Log-likelihood	n	Df
Model 1	1	1429	1.000	1465	1.000	-704.7	255	0

^a Model configuration number defined by Hayes (2022).

R-squared

	R ²
Model 1	
SUSTNANOBUS	0.531

The model summary results indicate a strong explanatory power of the estimated model in predicting the sustainability of Nano-enterprises. Model 1, as defined by Hayes (2022), records the lowest AIC (1429) and BIC (1465) values with corresponding weights of 1.000, indicating that it is the best-fitting and most parsimonious model among the alternatives considered. The log-likelihood value of -704.7 further supports the adequacy of the model, while the sample size of 255 observations provides sufficient degrees of freedom for reliable estimation. Additionally, the R-squared value of 0.531 reveals that approximately 53.1% of the variation in the sustainability of Nano-enterprises is explained by the predictors included in the model. This indicates a substantial level of explanatory power, suggesting that the model is well specified and suitable for testing the proposed relationships and moderating effects in the study.



Summary of Hypotheses Testing

Code	Statement	Statistical Evidence	P-value	Decision	Interpretation
H_{01}	Psychological capital has no significant influence on the sustainability of Nano-enterprises in Plateau State.	Psych Capital coefficient = 0.413, $P =$	$<.001$	Reject H_{01}	Psychological capital is statistically significant, meaning hope, Resilience, optimism, and self-efficacy influences sustainability of Nano Business
H_{02}	Entrepreneurial orientation has no significant effect on the sustainability of Nano-enterprises.	Entrep. Orient coefficient = 0.406	0.001	Reject H_{02}	Entrepreneurial orientation is statistically significant, meaning innovation, proactiveness, risk taking, autonomy, and competitiveness influence the sustainability of Nano Businesses
H_{03}	Entrepreneurial orientation does not significantly moderate the relationship between psychological capital and the sustainability of Nano-enterprises.	Moderation coefficient = -0.019	0.617	Fail to Reject H_{03}	Entrepreneurial orientation does not significantly moderate the relationship between Psychological capital and sustainability of Nano Business

The hypothesis testing results show that psychological capital has a significant positive influence on the sustainability of Nano-enterprises in Plateau State, as indicated by a strong coefficient ($\beta = 0.413$, $p < .001$), leading to the rejection of H_{01} . This implies that hope, resilience, optimism, and self-efficacy play important roles in enhancing the sustainability of Nano-enterprises. Similarly, entrepreneurial orientation significantly affects sustainability ($\beta = 0.406$, $p = 0.001$), resulting in the rejection of H_{02} and confirming that innovation, proactiveness, risk-taking, autonomy, and competitiveness contribute to sustaining Nano-enterprises. However, the moderation effect of entrepreneurial orientation on the relationship between psychological capital and sustainability is not significant ($\beta = -0.019$, $p = 0.617$), leading to the acceptance of



H₀₃, which indicates that entrepreneurial orientation does not significantly alter the influence of psychological capital on the sustainability of Nano-enterprises.

4.0 DISCUSSION OF FINDINGS

Psychological Capital and Sustainability of Nano Enterprises

The result of the analysis reveals that psychological capital significantly influences the sustainability of Nano enterprises in Plateau State. This implies that entrepreneurs who possess hope, resilience, optimism, and self-efficacy are more likely to sustain their businesses despite environmental challenges. The finding supports Psychological Capital Theory, which explains that positive psychological resources improve business performance and continuity (Luthans et al., 2007). The result is also consistent with the Resource-Based View, which recognizes intangible resources as sources of competitive advantage (Barney, 1991). Similar findings were reported by Nguyen et al. (2024), Yonla et al. (2024), and Ugwu and Oputa (2023), who found that psychological capital enhances sustainability outcomes among small businesses.

Entrepreneurial Orientation and Sustainability of Nano Enterprises

The findings revealed that entrepreneurial orientation has a significant positive relationship with the sustainability of Nano enterprises in Plateau State. This indicates that entrepreneurs who exhibit innovativeness, proactiveness, risks taking, autonomy and competitive aggressiveness are more capable of sustaining their businesses over time. The finding supports the Entrepreneurial Orientation Theory of Lumpkin and Dess (1996), which emphasizes that entrepreneurial behaviour contribute to long-term business success. The result also agrees with previous studies which showed that entrepreneurial orientation improves sustainability and competitiveness among small enterprises (Avelar et al., 2024; Munandar, 2025; Tyler, 2024).

Moderating Role of Entrepreneurial Orientation

The study further found that entrepreneurial orientation does not significantly moderate the relationship between psychological capital and sustainability of Nano enterprises. This means that although both variables independently influence sustainability, entrepreneurial orientation does not strengthen or weaken the effect of psychological capital. The finding suggests that Nano entrepreneurs rely more on personal psychological strengths than strategic business posture in sustaining their enterprises. In the case of Nano-enterprises in Plateau State, psychological capital contributes to sustainability independently of entrepreneurial orientation. This finding extends existing knowledge by demonstrating that entrepreneurial orientation may not always amplify the effect of psychological resources on sustainability because environmental constraints, limited resources, insecurity, the informal nature of Nano enterprises, and weak institutional support in Plateau State limit the ability of entrepreneurs to translate their entrepreneurial orientation into sustainable business outcomes.

Overall, the findings indicate that psychological capital and entrepreneurial orientation are both critical but independent determinants of Nano-enterprise sustainability. While each variable significantly enhances sustainability outcomes, entrepreneurial orientation does not moderate the effect of psychological capital. These results reinforce the relevance of Psychological Capital Theory (Luthans et al., 2007) and the Resource-Based View (Barney, 1991) in explaining sustainability among Nano-enterprises and provide context-specific evidence from Plateau State.



5.0 CONCLUSION, RECOMMENDATION/IMPLICATION

5.1 CONCLUSION

Based on the findings of this study, it is concluded that Psychological Capital is a critical internal resource for the sustainability of Nano-enterprises in Plateau State. In an environment characterized by economic volatility, insecurity, infrastructural inadequacies, and limited institutional support, Nano-entrepreneurs depend heavily on their psychological strengths to sustain their businesses. Hope enables entrepreneurs to set meaningful goals and identify alternative pathways when faced with obstacles. Self-efficacy enhances confidence in decision-making and problem-solving, while resilience supports recovery from business shocks such as financial losses or market disruptions. Optimism sustains motivation and positive expectations about future outcomes.

The study further concludes that Entrepreneurs who demonstrate high Entrepreneurial Orientation can sustain their businesses overtime. While Psychological Capital provides the internal motivation and mental capacity to persevere, Entrepreneurial Orientation determines how effectively these psychological resources are converted into action through innovation, proactiveness, and calculated risk-taking. Entrepreneurs who lack entrepreneurial orientation may possess strong psychological resources but fail to deploy them strategically, thereby limiting sustainability outcomes.

However, the moderation analysis showed that entrepreneurial orientation does not significantly moderate the relationship between psychological capital and sustainability. The acceptance of Null Hypothesis Three indicates that although psychological capital and entrepreneurial orientation independently contribute to sustainability, entrepreneurial orientation does not significantly alter the influence of psychological capital on sustainability within the context of this study. This suggests that the two variables operate largely through direct effects rather than interactive mechanisms.

In conclusion, the sustainability of Nano-enterprises in Plateau State cannot be fully explained by financial capital, government support, or infrastructure alone. Rather, it is significantly shaped by the entrepreneur's ability to harness internal psychological resources and align them with entrepreneurial strategies. By demonstrating that psychological capital and entrepreneurial orientation independently enhance sustainability, the study therefore provides a more holistic understanding of Nano-enterprise sustainability and contributes meaningfully to entrepreneurship, small business management, and sustainability literature.

5.2 RECOMMENDATIONS/IMPLICATION

1. Entrepreneurship development programs and support agencies should incorporate psychological capacity-building components alongside traditional business training to strengthen long-term sustainability. Nano-enterprise owners should also consciously develop their psychological capital, particularly hope, self-efficacy, resilience, and optimism, as these significantly enhance enterprise sustainability.
2. Government agencies and business development organizations should provide targeted training and mentoring that encourage entrepreneurial thinking and strategic decision-making to improve the sustainability of Nano-enterprises. Nano-enterprise owners on their part should



adopt stronger entrepreneurial orientation practices by promoting innovativeness, proactiveness, and calculated risk-taking.

3. Since entrepreneurial orientation did not significantly moderate the relationship between psychological capital and sustainability, interventions aimed at improving Nano-enterprise sustainability should treat psychological capital and entrepreneurial orientation as independent drivers. Support initiatives should therefore focus on strengthening both variables separately rather than assuming an interactive effect.

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