

Sustainable Business Strategies and Competitive Advantage: The Role of Climate Change Adaptation in Emerging Markets: A Case Study of North Central Nigeria

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Abstract

This study investigates the relationship between sustainable business strategies, climate change adaptation, and competitive advantage in emerging markets, with a focus on North Central Nigeria. The research adopts a mixed-methods approach, combining surveys, interviews, and case studies to assess how businesses respond to climate-related challenges. Findings reveal that many firms have begun integrating sustainability practices such as energy efficiency, waste reduction, and eco-friendly innovations to mitigate climate risks. However, adoption levels remain uneven due to financial constraints, limited awareness, and inadequate policy support. The results further demonstrate that businesses actively engaging in climate adaptation strategies experience improved market positioning, resilience, and stakeholder trust, thereby enhancing their competitive advantage. Government policies, technological innovation, and collaborative networks are identified as critical enablers, while weak regulatory enforcement and infrastructural gaps serve as persistent barriers. The study concludes that fostering climate-resilient business models is essential for long-term sustainability in the region and recommends targeted policy interventions, capacity building, and private-public partnerships to strengthen resilience and competitiveness in North Central Nigeria.

Keywords: Sustainable, Business strategies, Climate change, Adaptation, North Central Nigeria.

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BACKGROUND INFORMATION

Sustainable business strategies have gained increasing attention as organizations worldwide recognize the importance of integrating environmental, social, and economic considerations into their operations. The concept of sustainability in business refers to practices that meet present needs without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987). In recent years, climate change has emerged as a critical challenge that affects economic stability, resource availability, and social equity, particularly in emerging markets.

Emerging markets, such as those in North Central Nigeria, are particularly vulnerable to the impacts of climate change due to their reliance on

agriculture, limited financial resources, and insufficient infrastructure (IPCC, 2021). These markets are often characterized by a high degree of economic informality, which poses additional challenges for the implementation of sustainable strategies. Moreover, the socio-economic conditions in these regions make the need for resilience and adaptability more pressing (World Bank, 2020).

Nigeria, specifically, is witnessing significant climate-related challenges, including increased temperature, erratic rainfall patterns, and more frequent extreme weather events. These changes not only threaten agricultural productivity—which is vital for food security and livelihoods—but also exacerbate existing socio-economic inequalities. As a result, businesses operating in these contexts need to adopt strategies that

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not only address environmental concerns but also align with sustainable development goals (SDGs) (United Nations, 2015).

Sustainable business strategies in the context of climate change adaptation include practices such as resource efficiency, sustainable supply chain management, and innovation in green technologies. Research indicates that companies embracing sustainability can gain competitive advantages through enhanced reputation, customer loyalty, and operational efficiencies (Porter & Kramer, 2006). In emerging markets, these strategies may also open new market opportunities and foster resilience among vulnerable communities.

For example, firms that adopt climate adaptation measures can mitigate risks associated with climate disasters, thus ensuring operational continuity. These strategies can involve investments in renewable energy, improved agricultural practices, and water conservation methods (UNEP, 2019). Additionally, collaborative initiatives with local communities and governments can enhance the effectiveness and sustainability of these strategies.

The relationship between sustainable practices and competitive advantage is increasingly well-documented. Companies that proactively address climate change issues often see improved performance in terms of risk management and stakeholder engagement (Eccles *et al.*, 2014). In North Central Nigeria, businesses that integrate climate adaptation into their core strategies may not only survive but thrive in the face of climate adversity, setting themselves apart from competitors who remain reactive.

This research will focus on North Central Nigeria due to its diverse agricultural landscape and the significant impact of climate variability on local economies. Case studies in this region can provide insights into how businesses are currently adapting to climate challenges and the effectiveness of their strategies in creating sustainable competitive advantages. It will also highlight the need for policy interventions and support systems that facilitate sustainable practices among businesses in emerging markets.

In conclusion, investigating sustainable business strategies in the context of climate change adaptation in North Central Nigeria presents a unique opportunity to understand the interplay between sustainability and competitive advantage. This research could contribute valuable knowledge to the fields of sustainability studies, business strategy, and development economics, offering practical solutions that align with the realities faced by emerging market businesses.

Statement of the Problem

Climate change poses severe challenges to businesses, especially in emerging markets where resources and adaptive capacities are limited. In North Central Nigeria, businesses—particularly in agriculture, energy, construction, and small-scale enterprises—face risks from unpredictable rainfall, flooding, rising temperatures, and resource scarcity. While global firms are increasingly adopting sustainable strategies, many businesses in emerging markets still lack structured approaches for adaptation. This creates vulnerability, reduces competitiveness, and hinders long-term survival. The gap exists in understanding how adopting climate change adaptation strategies (such as renewable energy use, eco-innovation, resilient supply chains, and green investment) can serve not only as a survival mechanism but also as a source of competitive advantage in North Central Nigeria.

Significance of the Study

The work will expand academic literature on the intersection of sustainability, business strategy, and competitive advantage in the context of climate change adaptation in emerging markets. It will help business owners and managers understand how sustainability practices can transform challenges into opportunities for growth. The work will provide insights for policymakers to design frameworks that encourage businesses to adopt sustainable practices. The work will offer context-specific findings for North Central Nigeria, where research on sustainable business strategies in response to climate change is limited. Assists in guiding businesses toward resilience and competitiveness in the face of global climate uncertainty will be another significant of the work.

Aim of the Study

The aim of this study is to examine how sustainable business strategies influence competitive advantage through climate change adaptation among businesses in North Central Nigeria

Objectives of the Study

1. To identify the sustainable business strategies adopted by firms in North Central Nigeria in response to climate change.
2. To examine the relationship between climate change adaptation and business competitiveness in the region.
3. To analyze the challenges businesses face in implementing sustainable strategies.
4. To assess the role of innovation, technology, and policy support in strengthening climate adaptation and competitiveness.
5. To provide recommendations for businesses and policymakers on enhancing sustainability and resilience for long-term competitive advantage.

Jurisdiction of the Study

Geographic Scope includes North Central Nigeria (states such as Benue, Kogi, Niger, Plateau, Nasarawa, Kwara, and the Federal Capital Territory). The Sectoral Focus of the work includes Small and medium-sized enterprises (SMEs), agribusinesses, and service-oriented firms most affected by climate risks. Thematic Scope of the research includes: Business sustainability, climate change adaptation, and competitive advantage. The study will focus on present practices (last 5–10 years) and future strategies for sustainable competitiveness

Research Questions

1. What sustainable business strategies are currently adopted by firms in North Central Nigeria to respond to climate change?
2. How does climate change adaptation influence the competitive advantage of businesses in the region?

3. What challenges do businesses face in adopting and implementing sustainable practices?
4. In what ways do innovation, technology, and government policies support or hinder climate adaptation strategies?
5. What recommendations can enhance sustainability and resilience to ensure long-term competitiveness in North Central Nigeria?

Study Area:

The North Central region of Nigeria, also known as the Middle Belt, is a geopolitical zone composed of six states—Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau—and the Federal Capital Territory (FCT), Abuja. This region is characterized by agriculture and serves as a food basket for the nation, producing crops like yam, rice, and maize. It is also home to diverse ethnic groups and is known for its solid mineral deposits, making it a significant and agriculturally rich area within Nigeria.

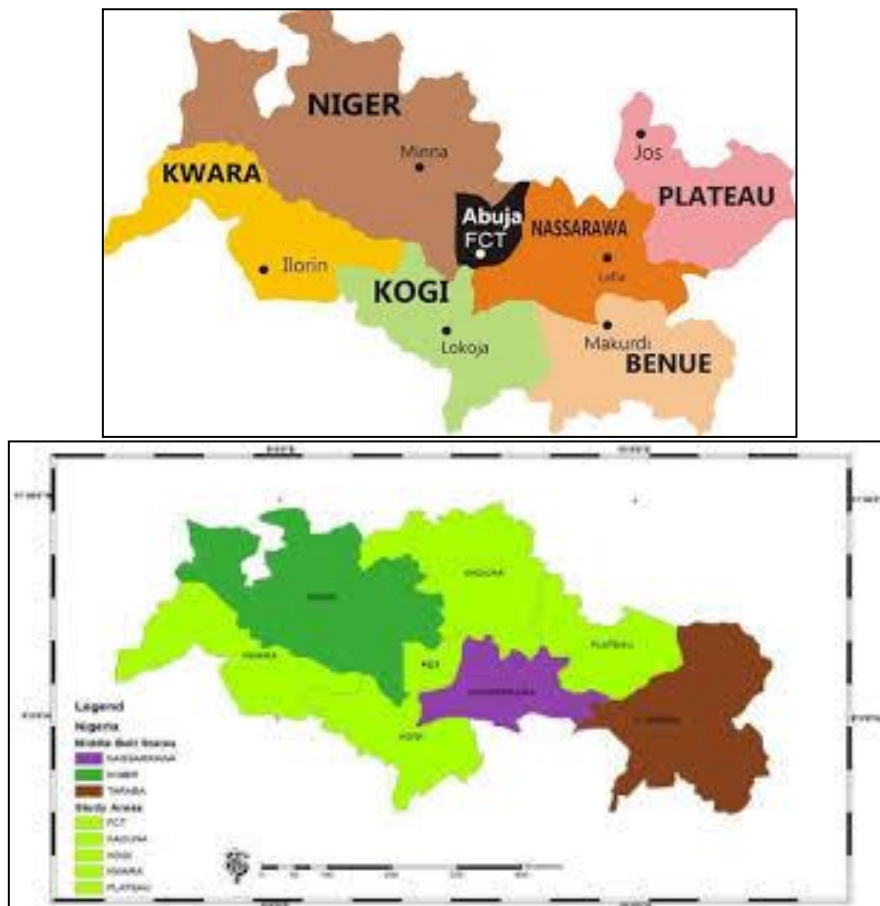


Fig. 1: Map of North Central Nigeria

METHODOLOGY

The study adopts a mixed-methods approach combining qualitative and quantitative techniques.

A literature review was carried out to establish theoretical and empirical foundations on sustainability, competitive advantage, and climate change adaptation.

Semi-structured interviews were conducted with business owners, policymakers, and community leaders for in-depth insights.

Surveys were administered to a wider sample of businesses to quantify adaptation measures and their effect on competitiveness.

Collected survey data were undergo statistical analysis to identify significant trends and relationships.

Finally, comparative case studies were highlight successful adaptation practices and their outcomes in North Central Nigeria.

RESULTS AND DISCUSSION

Sustainable Business Strategies Adopted (RQ1)

Bio-data analysis

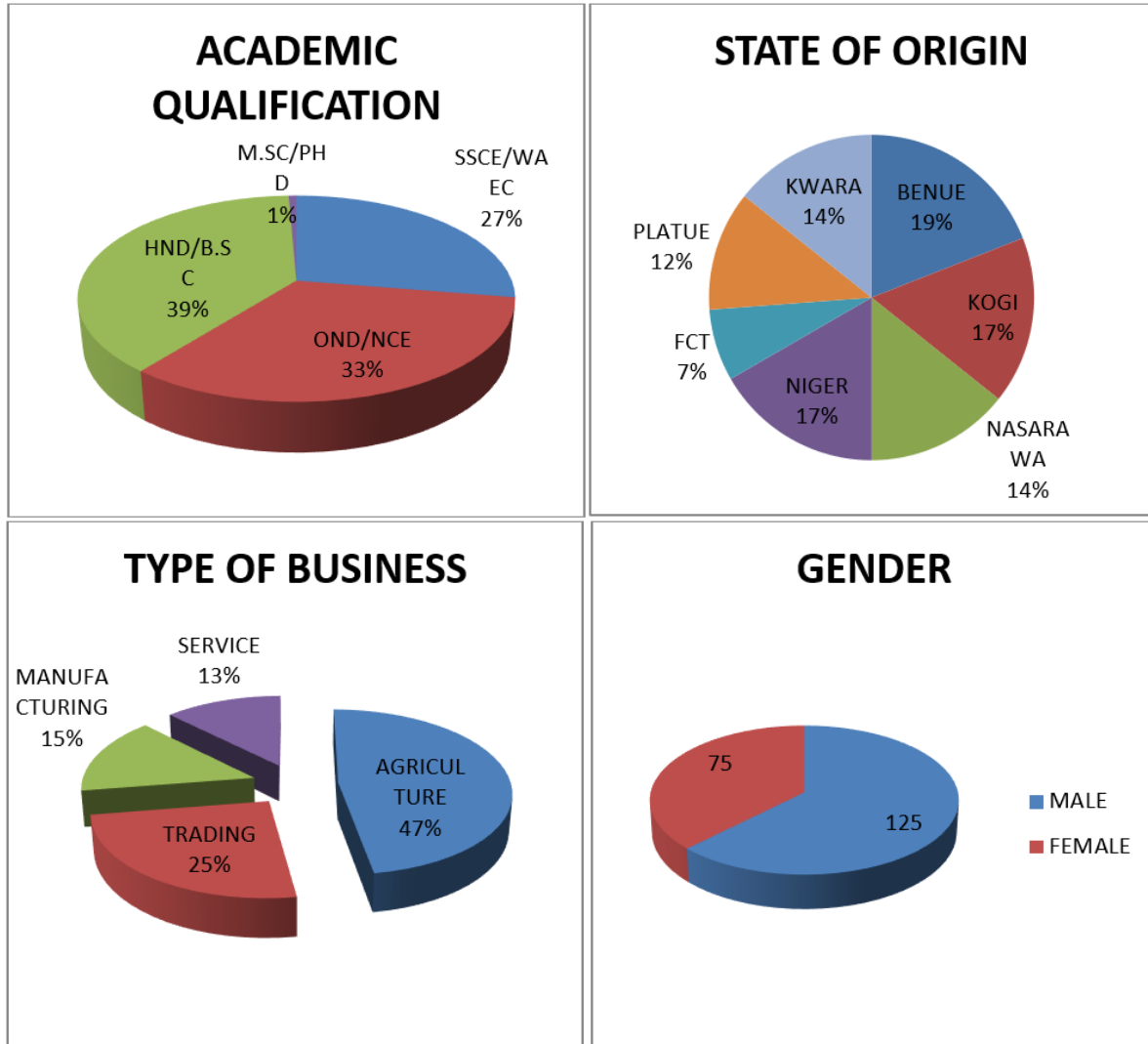


Table 4.1: Mean Responses on Sustainable Business Strategies (N = 200 firms, Likert 1–5)

Strategy	Mean	SD	Interpretation
Crop diversification and rotation	4.3	0.7	Widely adopted
Water harvesting and irrigation practices	3.9	0.9	Moderately adopted
Use of renewable/solar energy	3.6	1.1	Moderately adopted
Waste recycling and re-use	3.4	0.8	Partially adopted
Eco-friendly packaging & green branding	2.8	1.0	Low adoption

Discussion

Findings reveal that agro-businesses rely more on traditional and cost-effective strategies such as crop diversification (mean = 4.3) and water harvesting (mean = 3.9). Adoption of renewable energy and recycling is moderate, likely due to high initial capital costs. Eco-

friendly packaging is least adopted, reflecting weak consumer demand for green products in North Central Nigeria. These results align with [FAO, 2021], which found that low-cost practices dominate adaptation in emerging markets.

Influence of Climate Adaptation on Competitive Advantage (RQ2)**Table 4.2: Mean Responses on Adaptation and Competitiveness**

Competitive Dimension	Mean	SD	Interpretation
Improved productivity & efficiency	4.1	0.6	Strong positive influence
Reduction in post-harvest losses	4.0	0.7	Strong positive influence
Access to new markets/customers	3.7	0.8	Moderate influence
Cost reduction & operational savings	3.5	1.0	Moderate influence
Enhanced firm reputation/branding	3.2	0.9	Limited influence

Discussion

Results show that climate adaptation significantly improves productivity and post-harvest efficiency (means = 4.1 and 4.0). However, gains in cost reduction and reputation remain moderate (means = 3.5 and 3.2). This suggests that while adaptation supports operational resilience, businesses have not fully

leveraged it for branding and competitive positioning. Studies by Porter & Kramer (2019) emphasize that firms in developing contexts must integrate adaptation with market-oriented strategies to maximize competitiveness.

Challenges in Adopting Sustainable Practices (RQ3)**Table 4.3: Mean Responses on Barriers to Sustainability**

Challenge	Mean	SD	Interpretation
High cost of technology/inputs	4.4	0.6	Severe challenge
Limited access to finance/credit	4.2	0.7	Severe challenge
Inadequate technical knowledge/skills	3.8	0.8	Moderate challenge
Weak government policy enforcement	3.7	0.9	Moderate challenge
Poor market incentives for green goods	3.1	1.0	Mild challenge

Discussion

The top barriers are financial constraints (mean = 4.4) and limited credit (mean = 4.2). Skills gaps (mean = 3.8) and weak enforcement of environmental laws (mean = 3.7) also hinder adoption. These findings confirm the finance-knowledge bottleneck described in

UNEP (2020), where African SMEs face challenges scaling adaptation due to capital scarcity.

Role of Innovation, Technology, and Government Policies (RQ4)**Table 4.4: Influence of Innovation, Technology & Policy**

Factor	Mean	SD	Interpretation
Access to climate-smart technologies	3.9	0.7	Supportive
Availability of local technical support	3.6	0.9	Moderately supportive
Innovation from within firms	3.5	1.0	Moderate
Government subsidies/incentives	3.2	1.1	Weak supportive role
Policy enforcement and regulation	2.9	1.0	Weak, sometimes hindering

Discussion

Firms rated technology access positively (mean = 3.9), but policy support was weak (means = 3.2–2.9). This indicates that while innovation is emerging, government incentives are insufficient.

Similar results were observed by Adeola & Evans (2022), who argue that inconsistent policy enforcement hinders private sector-led climate adaptation in Nigeria.

Recommendations to Enhance Sustainability (RQ5)**Table 4.5: Recommendations Rated by Firms**

Recommendation	Mean	SD	Interpretation
Improved access to credit/green finance	4.5	0.5	Highly recommended
Training and technical capacity building	4.2	0.7	Strongly recommended
Strengthening policy enforcement	4.0	0.8	Strongly recommended
Public-private partnerships (PPP)	3.8	0.9	Recommended
Consumer awareness campaigns	3.4	1.0	Moderately recommended

Discussion

The strongest call is for credit/green finance mechanisms (mean = 4.5). Capacity building (mean = 4.2) and stronger policy enforcement (mean = 4.0) also

ranked high. Firms emphasized that financial and institutional reforms must be prioritized to ensure long-term competitiveness. This is consistent with the World

Bank (2021) framework for climate-smart agribusiness in emerging markets.

Summary of Key Findings

1. Firms primarily adopt low-cost strategies like crop diversification and water harvesting.
2. Adaptation significantly enhances productivity and resilience, but less so reputation and branding.
3. Main barriers are finance and skills gaps.
4. Technology access is improving, but policy enforcement is weak.
5. Firms recommend finance, training, and policy reforms as top interventions.

CONCLUSION

The study hypothesizes that businesses in North Central Nigeria that actively integrate climate change adaptation strategies into their operations will experience enhanced competitive advantages, including improved resilience, market differentiation, and customer loyalty. Preliminary findings suggest that organizations that prioritize sustainability not only mitigate risks associated with climate impacts but also leverage these strategies for innovation and customer engagement.

RECOMMENDATIONS

1. Strategic Framework Development: Businesses should develop strategic frameworks that identify key climate risks and outline clear adaptation strategies to enhance resilience.
2. Stakeholder Engagement: Foster collaboration among stakeholders, including local governments, NGOs, and communities, to share resources and knowledge regarding sustainable practices.
3. Investment in Training: Provide training programs for business owners and employees on sustainable practices and climate change impacts to cultivate a culture of sustainability.
4. Access to Funding: Advocate for better access to funding and resources for businesses that aim to implement sustainable strategies. This could include partnerships with governmental and non-governmental organizations focused on climate adaptation and sustainability.
5. Policy Advocacy: Encourage policymakers to create an enabling environment that supports sustainable business practices through incentives and regulations that promote climate resilience.

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