



Green Innovation and Entrepreneurship in Southwest Nigeria: Driving Sustainable Development in a Technological Era

Aliu Zainul Abideen¹, Adeoye Kowiat Titilayo², Tijani Saheed Abiodun³, Oyinloye Shakirat Abolaji⁴, Olubato Felicia Yemisi⁵ & Lawal Imran Babatunde⁶

¹ Department of Office Technology and Management,
School of Management Sciences, Federal
Polytechnic Ayede, Oyo State, Nigeria, *Corresponding*
Author: aliuza@federalpolyayede.edu.ng

ORCID iD: 0009-0007-8787-3830

² Department of Office Technology and Management,
School of Management Sciences, Federal
Polytechnic Ayede, Oyo State, Nigeria

³ Department of Office Technology and Management,
School of Communication and Information Science,
Federal Polytechnic Ede, Osun State, Nigeria

⁴ Department of Office Technology and Management,
School of Communication and Information Science,
Federal Polytechnic Ede, Osun State, Nigeria

⁵ Registry Department, Federal Polytechnic Ayede,
Oyo State, Nigeria

Abstract

Green innovation and entrepreneurship represent vital components for achieving sustainable growth within contemporary society, particularly in regions grappling with environmental challenges, such as Southwest Nigeria. This article examines the ways in which green innovation and entrepreneurship foster sustainable development in Southwest Nigeria—an area currently facing rising urbanization, industrial expansion and environmental degradation. The research investigates the current landscape of green innovation and entrepreneurship in Southwest Nigeria by analyzing existing literature and empirical data. It underscores significant factors such as economic incentives, environmental awareness and technological advancement. However, the study also identifies barriers, such as limited access to financing, legal constraints and infrastructural issues, which hinder the growth of eco-friendly enterprises in the region. Although these challenges exist, the research illustrates how green innovation and entrepreneurship have the potential to address environmental issues, stimulate economic growth and enhance social inclusion through successful case studies. This comprehensive approach reveals the multifaceted impact of green initiatives on the local community. The study suggests various methods to promote green innovation and entrepreneurship in Southwest Nigeria as it highlights the importance of governmental support, skill enhancement and collaboration among stakeholders.

Keywords: Green Innovation, Entrepreneurship, Southwest Nigeria, Sustainable Development, Technological Era

Introduction

The notion of sustainable development has been thoroughly analyzed and investigated from various perspectives, making it one of the most controversial phenomena in contemporary times. This is due to its complexities in creating a more livable environment for everyone. The environment is currently acquiring global significance and attention due to its interconnectedness with all areas of humanity, necessitating its care (Seymour, 2016). In order to promote sustainable development, organizations have prioritized green behavior as a means to assure environmental sustainability. Organizations are currently prioritizing the implementation of environmentally friendly methods in both manufacturing and service delivery within the marketplaces (Javaid, 2022). Sustainable practices have been prevalent in numerous businesses, and in Nigeria, safeguarding the environment has emerged as a paramount concern for organizations across various sectors (Iheanachor, 2021). Entrepreneurs and business owners are now required to prioritize the implementation of friendly practices and the production of environmentally sustainable products.

In the early 1990s, a definition of "green entrepreneurship" was proposed, with the focus being on the traits and qualities that are associated with entrepreneurship. This notion quickly acquired popularity and

attention. According to Hall (2013), a book written by Gustav Berle was the inspiration for green entrepreneurship. Businesses saw the green entrepreneur as a chance to do well for the environment and their bottom line. Even a quick review of Berle's description reveals that it is correct, concise, and based on moral principles. From this vantage point, green entrepreneurship can be defined as taking on the accountability for building a future that is intentionally imagined. According to Farinelli (2011), it is crucial to have a clear grasp of what green entrepreneurship actually entails, particularly in a world where big corporations value green marketing and building a green image over making actual, strategic, and quantifiable changes to their business processes and frameworks.

In today's world, consumers place a premium on supporting businesses that are environmentally conscious (Laroche, 2001). As a result, businesses and entrepreneurs are being held to a higher standard for their green initiatives, which in turn influences consumers' purchasing decisions. Having green marketing strategies in place gives entrepreneurial enterprises a significant edge in the market, as customers throughout the world are very concerned about environmental conservation (Apaza-Panca, 2024). This is why there has been a shift in emphasis and pricing towards environmentally conscious products; as a result, business owners are seeking ways to better explain green

market potential. Entrepreneurs brought environmentally friendly technology and products to market to change the way things were made (Sreenivasan, 2023). The old ways of doing things weren't sustainable, so there had to be changes in the economic, social, and political systems. Attention and focus have shifted away from humans and towards sustainable development due to the aforementioned goals. Consequently, there has been a shift in focus towards the need for sufficient environmental restoration and protection at the point where businesses interact with the natural world.

Statement of the Problem

Despite the growing recognition of the importance of green innovation and entrepreneurship in driving sustainable development, Southwest Nigeria faces several challenges in effectively harnessing these opportunities in the context of a rapidly advancing technological era. Many aspiring green entrepreneurs in Southwest Nigeria face barriers to accessing the necessary resources, including funding, technology, and market opportunities, which hinders their ability to develop and scale environmentally sustainable innovations. The absence of clear policies and regulatory frameworks tailored to support green innovation and entrepreneurship in Southwest Nigeria creates uncertainty and discourages investment in sustainable ventures. Additionally, bureaucratic hurdles and inconsistent enforcement of environmental regulations impede the growth of green businesses. There is a need to enhance

awareness and capacity building initiatives among entrepreneurs, policymakers, and the general public in Southwest Nigeria regarding the importance and potential benefits of green innovation. Many individuals and organizations may lack knowledge about sustainable practices, technologies, and business models, inhibiting their ability to adopt and promote environmentally friendly solutions. The lack of suitable infrastructure in Southwest Nigeria, which includes an unpredictable power supply, restricted access to clean water, and inadequate waste management systems, presents substantial obstacles for environmentally conscious business owners. These infrastructural limitations not only increase operational costs but also hinder the adoption of sustainable technologies and practices. It is against this backdrop that this paper examines the issues that are critical to unlocking the full potential of green innovation and entrepreneurship in Southwest Nigeria and leveraging them as drivers of sustainable development in the region.

Research Objectives

1. To examine the current landscape of green innovation and entrepreneurship in Southwest Nigeria.
2. To analyze the drivers and barriers impacting the growth of green ventures in the region
3. To assess the potential of green innovation and entrepreneurship in driving sustainable development

Literature Review

Green Innovation and Entrepreneurship in Southwest Nigeria

Whereas invention is the initial appearance of a related concept for a new technique or product, innovation is the initial decision to put it into action (Fagerberg, 2004). The secret to surviving this decade is a roadmap from invention to innovation. It is essential that every innovative idea be being considered as having promise, as a potential seed for innovation, and as something that may be fostered to become a viable venture.

According to Kong *et al.* (2016) and Aragón-Correa *et al.* (2013), "green innovation" refers to innovations that go beyond just complying with regulations and instead work to reduce environmental impacts and promote sustainability by conserving energy, preventing pollution, recycling waste, and enhancing corporate environmental management. Weng *et al.* (2015) and Conding *et al.* (2012) state that green goods and green processes are the two primary types of green innovation. The application of environmentally friendly technology, on the other hand, is strongly reliant on the development of green management. Zhu and Sarkis (2004) conducted study on the Chinese manufacturing sector and discovered that the buy-in of top- and middle-level management has a significant impact on the efficacy of information and event management (IEM) systems. Green commodities, green processes, and green management are the three primary areas of green innovation, according to this study's

citations of (Chiou *et al.*, 2011; Sharif and Alhiyasat, 2016). According to Dangelico and Pujari (2010), "green product innovation" is a flexible framework that takes into account the environmental effect of a product at each and every step of its life cycle, beginning with the procurement of raw materials and ending with its disposal. The framework places particular emphasis on the consideration of materials, energy, and pollution. According to Chen (2011), "green process innovation" is the implementation of novel concepts into existing production techniques and processes that minimise or eliminate environmental impacts. Green management innovation occurs when a business modernises its procedures, rules, and technology. According to Sharif and Alhiyasat (2016), in order to make green innovation a sustainable practice, it's important to alter the beliefs and lifestyles of workers while also transforming organisational systems and implementing new infrastructure. Green management innovation calls for a slew of structural adjustments to help businesses reduce their environmental impact (Chiou *et al.*, 2011).

The concept of "green entrepreneurship" is relatively new, despite the fast growth of "green" vocabulary. Pacheco *et al.* (2010) noted that there are still several concerns about green entrepreneurship that have not been resolved from the viewpoints of Accounting, Entrepreneurship, Finance, and Business Economics. So, according to Gibbs and O'Neill (2016), there's a conundrum for entrepreneurs who encounter both the foundations of green

entrepreneurship and its real meaning. Consequently, academics from a variety of backgrounds have described the notion in different ways to help scholars better comprehend it and find solutions to this problematic. For example, according to Green Project (2012), "green entrepreneurship" means taking calculated risks in pursuit of social and environmental goals, rather than blindly following "business as usual." This type of entrepreneurialism often involves lofty goals with uncertain outcomes, such as achieving financial sustainability. According to Zhaojun *et al.* (2017), green entrepreneurship is known to greatly experiment with different scenarios depending on how adaptable and flexible they are. This is due to the fact that green entrepreneurship is inherently innovative, which is why it frequently yields better results, helps businesses, and alleviates social problems.

Similarly, Awang *et al.* (2017) saw green entrepreneurs as a collective of visionaries with the power to rid our social landscape—the environment—of any impending danger. Thus, entrepreneurs can greatly benefit from starting at any level, which gives them the potential to build the green market as a vehicle for sustainable growth. Furthermore, according to Malavisi (2018), eco-entrepreneurs are individuals that bring 20th-century commercial strategies into the 21st century by being creative and innovative. So, in order to lessen the impact of environmental issues on a worldwide scale. Dale (2019) lent credence

to this idea by presenting green creativity—a game-changing tool for addressing pressing social, environmental, and economic issues—through the lens of green entrepreneurship. Therefore, innovative and creative business is all about combining human and non-human resources to address economic and societal issues. This is accomplished when entrepreneurs create authentic products and services that others can purchase and sell. This allows them to generate money and experiences personal fulfilment. Fundamental to green entrepreneurship, a modern and contemporary business practice that largely replaces the conventional model, is the pursuit of high-profit business goals while taking the environmental dimension into account and implementing mechanisms to maintain and protect its quality by mitigating any degradation.

Drivers of Green Innovation and Entrepreneurship in Southwest Nigeria

- A. Economic Incentives and Market Opportunities: Government regulation, tax breaks, subsidies, and incentives can all play a role in getting companies to go green. It is possible to encourage green innovation and entrepreneurship through policies that support sustainable agriculture, waste reduction, and renewable energy.
- B. Environmental Awareness and Concerns: Green innovation and entrepreneurship can be propelled by a greater public understanding of

environmental challenges and the value of sustainable practices.

- C. **Technological Advancements:** There is potential for technological progress to result in the development of environmentally friendly goods, procedures, and services.

Barriers to Green Innovation and Entrepreneurship in Southwest Nigeria

An increasing number of Nigerians are beginning to see the value of sustainable practices and environmental protection, even if green entrepreneurs confront several obstacles. A more favorable setting for green entrepreneurship is being sought for by working to remove these obstacles (Yasir, 2023).

Collaboration between public, commercial, and non-profit organizations is essential if we are to find ways to encourage environmentally conscious company practices, lower transaction costs, broaden participation in green technology, and simplify regulatory procedures (Chauhan, 2022). Investment in training and education programs to increase competence in environmentally responsible company practices is also necessary. Because of this, not only will entrepreneurs be better able to succeed, but new jobs will be created and Nigeria's economy will flourish. Essentially, green entrepreneurs in Nigeria confront substantial obstacles, but they also have a lot of room to expand and succeed (Rajkamal, 2022). Nigeria has the potential to become a global leader in environmentally and economically responsible entrepreneurship with the

correct infrastructure, resources, and encouragement.

A. Lack of Access to Finance and Investment: Obtaining capital poses a significant obstacle for entrepreneurs in southwest Nigeria, particularly those aiming to launch or expand environmentally conscious enterprises. Inadequate funding and exorbitant lending rates pose challenges to the expansion of environmentally conscious businesses.

B. Regulatory and Policy Constraints: Uncertainty plagues environmentally conscious companies due to complicated legislation, bureaucratic red tape, and inconsistent policy enforcement. Startups may face challenges while trying to comply with sustainability standards and understand the complex regulatory environment.

C. Infrastructural Challenges: The growth of environmentally conscious companies that depend on renewable energy and effective garbage disposal might be hindered by insufficient infrastructure, such as an unstable power grid and insufficient waste management systems.

Case Studies of Successful Green Ventures in Southwest Nigeria:

Heritage Place, Lagos

The Heritage Place in Lagos was the pioneering commercial structure to achieve LEED certification for both design and construction. Using state-of-the-art technology, the building satisfies both the current and future demands for environmental care. The building's cooling units recover

condensate, which is then used to irrigate the gardens; the restrooms have precise control systems that reduce water waste; and the rainwater is collected and reused. Devices that identify when someone is there automatically and lights that use less energy can be provided just when they are really needed. Heritage Place is oriented in a way that makes the most of the natural light and airflow. Cooling, heating, and indoor air quality energy consumption are all reduced as a result of reduced exposure to solar radiation. A combination of an external thermal envelope and high-efficiency glass reduces the building's cooling load. Using cutting-edge energy-saving technologies like solar panels and natural ventilation systems, this project drastically decreased energy use (Fernando *et al.* 2023). To further decrease operating expenses and environmental impact, the building's design maximised the use of natural light and rainwater collecting. After receiving certification from the Green Building Council of Nigeria, the Lotus Tower was acknowledged as a trailblazer in ecologically responsible building in the area (GBCN).

Green Oasis Residence

Showcasing sustainable development in southwestern Nigeria, The Green Oasis Residence is a residential complex located in Ibadan. Adejumo and Adeosun (2022) noted that Green Oasis Residence made use of environmentally friendly materials that were purchased locally, as well as energy-efficient appliances and methods for treating wastewater. Aside from

reducing emissions of greenhouse gases, the programme provided a cleaner and cosier home for its residents. Future sustainable dwelling constructions can learn from the successful green building.

Nestoil Tower, Lagos.

Nestoil Limited owns the design and construction of the Mixed-Use Nestoil Tower on Victoria Island in Lagos. Its building year is 2015. Located on Victoria Island, the spot is halfway between Saka Tinubu Street and Akin Adesola. There is 12,200 sq. m. of commercial space in the building, in addition to a helipad. Over the course of fifteen stories, you'll find 3,900 square metres of adaptable space. The total leasable space is approximately 9,900 square metres spread over all floors. For those in need of a place to call home, there are residential accommodations available. Among the building's amenities are multi-story parking lots and leisure spaces. A silver certification from the Leadership in Energy and Environmental Design (LEED) was bestowed upon the structure.

Impacts of Green Innovation and Entrepreneurship

Economic Impacts: As soon as the economic significance of entrepreneurship was recognised, economists started looking at entrepreneurial capital as a potential replacement for knowledge capital or as a fourth production factor (Audretsch and Keilbach, 2004; Urbano et al., 2020; Wong et al., 2005). Economists began to explore entrepreneurial capital as a possible substitute for knowledge capital. Because of this, over a hundred empirical studies on

the economic effects of entrepreneurship have been published in the previous twenty years. These researches range from the positive to the negative. According to Neumann (2021a), total early-stage entrepreneurial activity (TEA) was found to be the most suitable statistic for evaluating the impact of entrepreneurship on a global scale. Several literature reviews that looked at this body of evidence found that entrepreneurship does, in fact, contribute to economic growth. However, these reviews also found that the most successful entrepreneurs are those who are innovative, opportunity-driven, and have lofty growth goals (Neumann, 2021a; Urbano et al., 2020; Van Praag and Versloot, 2007). Although many studies have looked at the financial effects of entrepreneurship in general, there is a lack of data on how green entrepreneurship affects the economy. However, there are four main reasons why entrepreneurs that are environmentally conscious are likely to have different economic consequences. First, new green businesses that focus on environmental issues often find long-term opportunities that would have gone unnoticed by more traditional companies. Academic studies have shown that ecologically large market defects may lead to innovative technical breakthroughs and changes in company models (Dean and McMullen, 2007; Cohen and Winn, 2007). Emerging environmentally aware businesses may speed up economic growth by taking use of these opportunities, which both complement and create new markets (Schaltegger, 2002).

In addition, green entrepreneurship stands out from other developing technologies when it comes to turning new ideas into successful businesses and sharing expertise. According to Dechezleprêtre et al. (2013), this is shown by the fact that 'clean' technologies are able to provide higher marginal economic value. New research has shown that the levels of internationalization, growth, and innovation are positively correlated with the quality of new green initiatives, lending credence to this conclusion (Hoogendoorn et al., 2020; Neumann, 2022).

Environmental Impacts: Increasing amounts of research support the idea that entrepreneurialism is negatively correlated with environmental sustainability. Based on research carried out in China (Gu and Zheng, 2021), Africa (ben Youssef et al., 2018), developing nations (Dhahri and Omri, 2018), and countries with low, medium, or high incomes (Omri, 2018), it has been determined that entrepreneurship has a negative impact on the quality of the environment. Furthermore, research in the field of economics has shown that opportunity-based entrepreneurship has a beneficial influence on environmental sustainability, in contrast to necessity-based entrepreneurship, which has a negative impact (Dhahri et al., 2020; He et al., 2020). According to Omri (2018), this would imply that business owners in countries with high incomes have a less impact on the deterioration of the environment. In spite of the fact that there is evidence to suggest that entrepreneurship may have adverse effects on the environment, scholars such as Dean and

McMullen (2007), Hall et al. (2010), and York and Venkataraman (2010) contend that environmentally conscientious and inventive entrepreneurship might be a solution to these problems. With regard to this viewpoint, there are three primary pieces of evidence that provide support. In the first place, studies have shown that sustainable or green entrepreneurs have a double-edged sword: they make the environment better (Dean and McMullen, 2007; York and Venkataraman, 2010), and they also bring about a significant change in the manner in which we produce and consume commodities (Belz, 2014; Vickers and Lyon, 2014). According to Choi and Grey (2008), Marsden and Smith (2005), and Pastakia (1998), customers, communities, and existing businesses all look up to these entrepreneurs as a result. According to Shepherd and Patzelt (2011) and Cohen and Winn (2007), green entrepreneurs are seen to have the ability to improve agricultural practices and water supply, conserve ecosystems, combat climate change, minimise environmental degradation and deforestation, and a variety of other things. In addition, they are believed to have the ability to improve other aspects of the environment. Additionally, the idea that a green entrepreneurial mindset improves environmental performance at the micro level is backed by preliminary findings from empirical studies (Meirun et al., 2020). These findings were published in the early stages of the research process. On the other hand, new businesses that are ecologically conscientious could actually be beneficial to the world, in contrast to the

possible adverse effects that might result from more entrepreneurial activity. According to the findings of this study, more environmentally conscious activities lead to better environmental outcomes.

Social Impacts: Despite entrepreneurship's centrality to economic growth, economists have long disregarded its impact on macro-level social development (Gries and Naudé, 2011). Human or social development is "the process of expanding the choice" of individuals, according to the United Nations Development Report (1990). The most important choices are the ones that pertain to education, health, and access to resources that allow for a reasonable quality of life. The research shows that entrepreneurial spirit improves character traits including hard effort, financial independence, and wealth accumulation (Gries and Naudé, 2011). Itri et al. (2015) found that it improves quality of life and helps solve current health care problems. Thus, entrepreneurship may contribute to the advancement of human civilization. There are three lines of reasoning that point to the societal effects of green entrepreneurship being distinct from those of more conventional types of company ownership. Green companies, first and foremost, care about their employees' and customers' health and happiness. A healthier workplace (Xie et al., 2016) and higher quality output (Chuang and Yang, 2014) are the results of their efforts to minimise or do away with harmful gases and materials. Second, as environmental deterioration is strongly correlated with social development, green entrepreneurs probably help ameliorate

social problems by tackling environmental issues (Grossman and Krueger, 1995). As a social SDG, "zero hunger" and "healthy lives" may be indirectly attained via efforts to enhance the quality of the local water and air. Methods such as providing access to renewable energy, electric mobility, or filtration systems may accomplish this. As a result, fewer people will suffer from respiratory problems and local fish supplies will likely recover. Thirdly, green entrepreneurs really want to make a difference for the environment, not because they are worried about losing their jobs. The potential drive, consumer and worker health and safety advantages, and indirect social ramifications of environmental activities all point to green entrepreneurship having a positive social effect. Hence, the research argues that more entrepreneurial endeavours lead to society advancement.

Strategies for Promoting Green Innovation and Entrepreneurship in Southwest Nigeria

The problems encountered in South-Western Nigeria are closely related to the solutions proposed to encourage the adoption of green entrepreneurship practices there. For example, as mentioned in the methods section, financial incentives and easily accessible green financing choices can help with The Green School Project during Children's Day Celebration and other economic issues. Similarly, in order to overcome behavioral and cultural obstacles to green construction techniques, awareness and education campaigns are crucial (Park & Kim, 2020). It is possible to

gradually alter cultural assumptions by engaging with communities and emphasizing the benefits of environmentally friendly building practices.

- a. **Policy Recommendations:** It is imperative that the government be prepared to take the lead in developing policies that would educate the entrepreneurial sector and prepare them to adopt environmentally friendly practices.
- b. **Capacity Building and Education:** By providing professionals with the training they need, capacity-building and education initiatives tackle the problem of insufficient knowledge and experience in sustainable building practices.
- c. **Collaboration and Networking:** Under the United Nations Framework Convention on Climate Change (2023), it is recommended that educational institutions, government agencies, and professionals in the sector work together to guarantee the successful implementation of capacity-building programmes and the cultivation of local knowledge in environmentally friendly construction methods.

Conclusion

Based on the findings of this study, green entrepreneurship may be the answer to resolving the difficulties that we will face in the future. As a consequence of this, there is a significant connection between environmentally conscious business

practices and long-term economic growth. This discovery may be used to educate business owners and also highlights the need of being environmentally conscious. Green entrepreneurship provides a solution to social and environmental issues; it prioritises the requirements of both the present generation and the generations to come, without allowing business owners to give up on their goals for the future without compromising their values. Therefore, the results of this research provide credence to the notion that green entrepreneurship might help shift entrepreneurial perspectives towards more sustainable practices. Additionally, it may be worn as a mask to advocate for ecologically responsible practices that contribute to maintaining a livable earth and guaranteeing a stable living environment for all Nigerians. For business owners who care about the world around them but don't want to compromise future generations' aspirations for prosperity, "green entrepreneurship" remains a practical and ethical choice.

Implications for Policy and Practice

The findings have significant implications for the region of southwestern Nigeria. They urge that infrastructure development begin, that green financing efforts be launched, and that enabling rules and regulations be created in tandem with green building projects. Future construction methods will need to adapt to different cultures and engage the local population. Innovation, expansion, and long-term cost savings are what stakeholders in the industry may look

forward to as a result of the move towards green entrepreneurship practices. Policymakers have a pivotal role to play in facilitating this transition since their actions determine the regulatory landscape and financial incentives that impact the success of green entrepreneur uptake.

Future Directions and Recommendations

Testing the efficacy of the methods suggested here should be the primary goal of future studies. Assessing the efficacy of these initiatives will shed light on how they have influenced environmentally conscious business owners in southwestern Nigeria. The best way to help entrepreneurs deal with environmental problems is to organize green entrepreneurial programmes that raise awareness about these issues and how to solve them. This will help entrepreneurs become more conscious of the problem and realize that there are ways to make a difference. Conducting additional research is crucial for the development and implementation of environmentally friendly construction practices in the construction industry in South-Western Nigeria.

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