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SUSTAINABLE BUSINESS PRACTICES AND ENVIRONMENTAL EDUCATION: A STUDY OF EARLY-CAREER ADMINISTRATIVE OFFICERS IN ORON, AKWA IBOM STATE, NIGERIA

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ABSTRACT

This study investigated sustainable business practices and environmental education: A study of early-career administrative officers in Oron, Akwa Ibom State, Nigeria. The study was prompted by the persistent accumulation of municipal and coastal waste around Oron beaches and the local markets, which highlights a failure to translate environmental awareness and business skills into structural organisational changes within the local government area. A descriptive survey research design was adopted for the study. The population comprised 157 early-career administrative officers in Oron LGA. Given the manageable size of the population, a census sampling technique was utilised. Data were collected via "Environmental Education and Sustainable Business Practices Questionnaire (EESBPQ)", validated by Business Management, Business Education, and Measurement and Evaluation experts, pilot-tested and confirmed using Cronbach's alpha method, which yielded a reliability coefficient of 0.89. Data were analysed using simple linear regression to answer research questions, and to test null hypotheses at .05 level of significance. The findings of the study revealed that, waste management literacy, resource conservation knowledge, and green entrepreneurial skills exert statistically significant positive influence on sustainable business practices among early-career administrative officers in Oron. The study concluded that theoretical environmental literacy and conservation knowledge are insufficient on their own; they require practical green business skills to successfully drive structural waste-to-wealth practices within local administration. It was recommended, among others, that local government authorities, the Federal Ministry of Marine and Blue Economy and commercial banks, should pool resources to launch a co-funded waste-to-wealth business incubation hub within the Oron economic zone.

Keywords: Green Entrepreneurial Skills, Business Education, Waste-to-Wealth, Circular Economy, Sustainable Business Practices, Nigeria

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Introduction

The traditional boundary separating environmental protection from economic development has completely collapsed (Porter & Van der Linde, 1995; World Commission on Environment and Development, 1987). Globally, under the United Nations Sustainable Development Goals (SDGs), modern organisational management has shifted away from simply cleaning up pollution towards sustainable business practices. This involves transforming environmental liabilities into profitable assets (United Nations, 2015; Porter & Van der Linde, 1995). In critical coastal border regions of Oron, Akwa Ibom State, this challenge is no longer just an ecological concern; it is an economic emergency. Oron's vital inland waterways, bustling beach markets, and heavy cross-border jetty activities generate complex waste streams that choke aquatic and terrestrial habitats, destroy commercial value, and restrict local government revenues. Historically, public and private organisations handled this through basic compliance, routine clean-ups, or passive awareness. This study breaks away from those outdated methods, arguing that the solution lies in a robust Business Education model that treats waste as a valuable raw material within a circular, "waste-to-wealth" economy.

To turn this concept into a reality, an organisation needs a specific set of workforce capabilities. Within the framework of Business Education, this study focuses on three critical dimensions of environmental capability: waste management literacy, resource conservation knowledge, and green entrepreneurial skills. Waste management literacy represents the foundational cognitive foundation, encompassing an individual's understanding of waste segregation protocols, recycling methods, and statutory environmental guidelines (Hollweg et al, 2011). Resource conservation knowledge expands this baseline into strategic corporate planning by providing an analytical understanding of material life-cycles, paperless routing, and energy-efficiency metrics designed to minimise resource exploitation (International Organisation for Standardization {ISO}, 2006; Schaltegger & Sturm, 1998). Green entrepreneurial skills then serve as the vital operational vehicle, providing the practical business competencies such as waste-stream monetisation, green venture creation, and circular value-loop accounting required to turn theoretical awareness into active market ventures (Schaltegger et al, 2012; United Nations Conference on Trade and Development, 2023).

While Human Capital Theory, as pioneered by Schultz (1961) and formalised by Becker (1964), confirms that specialised education acts as a strategic capital investment that directly boosts worker productivity, global research highlights a frustrating "knowledge-to-action gap". Most professionals know that waste dumping is bad, yet very few know how to build a business that solves it. This study addresses that critical disconnect. It demonstrates that theoretical waste literacy and conservation knowledge are merely passive baselines. To actually drive sustainable business practices, they should be paired with practical, hands-on green entrepreneurial skills. Without these practical business skills, environmental education remains trapped as empty theory.

The true novelty of this research lies in its unique target population and its quad-sector approach. For decades, sustainability literature has centered on the middle tier of employment, focusing almost exclusively on either multinational manufacturing corporations or low-skilled informal waste pickers. This study fills that empirical gap by investigating early-career administrative officers (Grade Levels 08–10) and their corporate equivalents. As the

foundation tier of senior management, these early-career professionals are the primary operational engine of any organisation. Yet, they are consistently treated as mere clerical functionaries. By examining this highly educated cadre across a unique, quad-sector pool, the Oron Local Government Council (public policy), the Maritime Academy of Nigeria, Oron (maritime parastatal), commercial banks (green finance), and local commercial enterprises (private sector), this study adds another dimension to the body of knowledge.

Most importantly, this research provides a rich empirical framework for the coastal border economies. It demonstrates how policy-makers, curriculum designers and institutional leaders can connect green credit routing, local marine safety compliance and civic service administrative capacity into a single, unified strategy. By doing so, it offers a definitive roadmap for using Business Education to transform routine administrative workforce capacity into a proactive, revenue-generating and self-sustaining coastal biosphere.

Statement of the Problem

The rising volume of municipal solid waste and coastal pollution in Oron LGA highlights a major institutional failure: the inability to convert environmental awareness into practical economic solutions. Current local government sanitation programmes focus primarily on routine clean-ups and basic environmental awareness. However, they do not provide the workforce with actionable green business skills. This creates a clear disconnect. While administrative personnel understand the ecological dangers of waste accumulation around Oron beaches and local markets, they lack the practical entrepreneurship competencies, such as waste-stream monetisation and recycling management, needed to launch sustainable "waste-to-wealth" initiatives. Consequently, valuable recyclable materials are treated as hazardous liabilities, leading to blocked drainage systems, groundwater contamination and preventable financial losses across the local economy.

This operational issue is compounded by a significant gap in talent utilisation regarding Grade Level (GL) 08–10 administrative officers within the Oron LGA administration. As the foundational tier of the senior cadre, these early-career officers possess the formal education and policy insight necessary to execute structural environmental changes. Unfortunately, the current bureaucratic system restricts them to routine paperwork and administrative tasks, completely under-utilising their capacity (OECD, 2023) . Furthermore, existing research overlooks this specific group, choosing to focus instead on either local government waste management agencies or informal, low-skilled waste pickers. As a result, Oron LGA faces a dual crisis: a worsening environmental threat to its coastal ecosystem and an under-utilised tier of senior personnel who have the capacity to manage policy but lack the entrepreneurial framework to do so. This study addresses this problem by examining how waste management literacy and resource conservation knowledge can be integrated with green entrepreneurial skills to unlock the sustainable economic potential of GL 08–10 administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Objectives of the Study

The main objective of this study is to determine the extent to which environmental education influences sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria. Specifically, the study sought to:

1. Determine the extent to which waste management literacy influences

sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.
2. Evaluate the extent to which resource conservation knowledge influences sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.
3. Investigate the extent to which green entrepreneurial skills influence sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Research Questions

1. To what extent does waste management literacy influence sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria?
2. To what extent does resource conservation knowledge influence sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria?
3. To what extent do green entrepreneurial skills influence sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria?

Research Hypotheses

$H0_1$: Waste management literacy does not significantly influence sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

$H0_2$: Resource Conservation Knowledge does not significantly influence sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

$H0_3$: Green entrepreneurial skills do not significantly influence sustainable business practices among early-career administrative Officers in Oron LGA, Akwa Ibom State, Nigeria.

Literature Review

Concept of Environmental Education (EE)

Environmental education is described as a continuous lifelong learning process that aims to create an environmentally conscious global citizenship. It focuses on developing a holistic understanding of the biophysical and socio-economic environment, while cultivating the critical thinking, problem-solving skills, values, and ethical commitments necessary to prevent and resolve environmental degradation (United Nations Educational Scientific and Cultural Organisation (UNESCO, 1978). The U.S Environmental Protection Agency (EPA, 2026) viewed it as a structured process that allows individuals to explore environmental issues, engage in problem-solving, and take active, informed steps to improve the environment. Rather than advocating a particular viewpoint or course of action, it teaches individuals how to weigh various sides of an issue through critical thinking and enhances their analytical and decision-making skills. It is explicitly conceptualised as a process aimed at producing a citizenry that is deeply knowledgeable concerning the biophysical environment and its associated problems, highly aware of how to help solve these problems, and passionately motivated to work toward their long-term solution (Stapp, 1969).

According to Hungerford & Volk (1990) environmental education is viewed as a deliberate pedagogical process designed to systematically transform autonomous learners into environmentally responsible citizens. It achieves this by providing the cognitive critical knowledge, locus of control and operational

skills required to take positive action on an individual and collective level. Roth (1992) described it as the structural educational conduit through which individuals achieve "environmental literacy". This literacy is characterised by an individual's progressive capacity to perceive, interpret, and act appropriately to maintain, restore or improve the health of biophysical and human environmental systems. Palmer (1998) viewed it as an integrated, three-dimensional learning paradigm that encompasses education about the environment (cognitive knowledge), education in or through the environment (experiential learning), and education for the environment (ethical action and sustainable stewardship). It is viewed as an essential, web-like dimension of personal development and socialization that concerns our fundamental relationship to the environment. It is not merely a field of study, but a critical pedagogical process aimed at reconstructing our relationship with the niche where life unfolds, the resources we consume, and the communities we share (Sauvé, 2005). It is also viewed as a transformative learning process that shifts deeply ingrained mechanistic worldviews toward an ecological or systemic mindset. It builds the collective capacity of human systems to adaptively manage workplaces and natural habitats through sustainable, resilient and non-destructive behaviours (Sterling, 2011). Within the West African context, environmental education is viewed as a specialised administrative and curriculum framework designed to cultivate localised ecological consciousness. It provides professional and corporate managers with the baseline functional values, regulatory compliance literacy, and practical skills necessary to combat environmental degradation within developing industrial and port economies. Synthesizing these scholarly perspectives, this study conceptualizes environmental education not merely as classroom instruction, but as a deliberate capacity-building process that equips early-career administrative officers with the operational waste management literacy, resource conservation knowledge, and green entrepreneurial skills required to foster sustainable workplace practices.

Sustainable Business Practices (SBP)

SBP is an organisation's capability to systematically navigate intertemporal trade-offs, ensuring that short-term financial considerations do not compromise the long-term ecological and social conditions required for intergenerational equity (Bansal & DesJardine, 2014). It is the process of embedding sustainability such that environmental and social goals act as the central driving force shaping the company's internal governance and decision-making structurally while transforming the traditional neoclassical focus on short-term profit maximisation (Stubbs & Cocklin, 2008). It is also the deliberate reconfiguration of a firm's operational architecture to balance four core components: a sustainable value proposition, a responsible upstream supply chain, an ethical downstream customer interface, and a financial model that distributes costs and benefits equitably (Boons & Lüdeke-Freund, 2013). It can further be viewed as the adoption of sustainable practices through the implementation of specific business archetypes that systematically minimize negative externalities, optimise resource efficiency, monetise waste streams, or substitute traditional assets with clean, natural processes (Bocken et al, 2014).

According to Schaltegger et al (2016) SBP is the process by which an enterprise expands its operational boundaries to explicitly manage, communicate, and capture multi-dimensional value, actively regenerating natural

and social capital rather than merely consuming them. It is the institutional transformation wherein environmental stewardship, social justice, and economic viability are treated as mutually reinforcing objectives within a unified corporate framework, moving beyond voluntary philanthropy into core operations (Elkington, 1998). It is also the progression of a business from basic compliance (reducing its negative footprint) toward a proactive state where it actively leverages its core competencies to solve pressing global socio-ecological problems as a primary source of economic value (Dyllick & Muff, 2016). It can further be viewed as the shift in organisational design to include the environment and society as silent, non-predatory stakeholders whose rights, risks and health are actively accounted for in every strategic trade-offs and capital allocation decision (Freeman & Phillips, 2002).

SBP is the adoption of sustainable workflows through the synchronisation of technological innovations (such as clean energy or automated sorting) with social networks, shaping internal corporate culture and external stakeholder values simultaneously (Geissdoerfer et al, 2018). It is a systemic adaptation where an enterprise transitions its value-creation pipeline from a linear "take-make-waste" model to a closed-loop, circular network that retains materials, resources, and energy at their highest utility for as long as possible (Ghisellini et al, 2016).

A synthesis of the academic literature reveals that SBP is the institutional transition from an "insider-out" profit maximisation model to an "outside-in" societal value model. This operational transformation functions across a three-tiered systemic Framework:

- The Temporal Dimension (Why): It expands the firm's strategic horizon from immediate quarterly performance to long-term intertemporal equity, using the earth's planetary boundaries as the ultimate constraint on corporate growth.
- The Structural Dimension (How): It fundamentally replaces traditional neoclassical metrics with a multi-fiduciary purpose, elevating nature and community from external variables into permanent internal stakeholders.
- The Network Dimension (What): It reorganises the entire business ecosystem, redesigning supply chains to maximise resource efficiency, eliminating lifecycle waste, and changing consumer relationships from product ownership to circular utility. In conclusion, SBA occurs when an organisation ceases to treat sustainability as a cost centre or a compliance burden, instead embedding it as the foundational architecture through which long-term economic viability is achieved.

Early-Career Administrative Officers (EAO)

According to Organisation for Economic Co-operation and Development (OECD, 2023) entry-level public sector administrative professionals occupy foundational operational and policy-support grades designed to build core organisational competencies and facilitate internal career-mobility. They are characterised by a transition from foundational technical skill acquisition to the application of discretionary public management principles, institutional navigation, and adherence to public accountability standards. Nationally, this standard is maintained by utilising entry-level structures as a proactive talent mechanism. Specifically, they act as a critical pipeline for strategic public leadership by fast-tracking high-calibre graduates into sensitive complex policy-drafting and decision-making roles (Career Services,

n.d). This targeted progression ensures that the macro-level accountability goals established by international frameworks are successfully operationalised within daily domestic governance.

ActionAid International Nigeria (2023) viewed an early-career administrative officer as a novice administrative professional possessing specialised foundational credentials (typically a first degree in Social Sciences, Humanities, or Business Administration) who is navigating their initial years of service to convert theoretical planning and prioritisation skills into practical organisational coordination. Indeed (2026) viewed it as an entry-level office professional whose early-career duties focus on maintaining organisational logistics, executing daily clerical support, monitoring office resource inventory, coordinating schedules, and ensuring the confidentiality and security of institutional filing systems. It is also viewed as an early-career administrator situated within a management umbrella whose primary structural function focuses heavily on coordinating non-human corporate resources, internal record-keeping, expense routing, and day-to-day office environment maintenance, rather than high-level strategic personnel management (Olakeye, 2021; Bassey & Ebieme, 2026). According to the University of South Africa (2025) EAO is an early-career manager who functions as a technical and operational liaison learning to integrate institutional software systems, automated tools, and budgeting templates with the broader social and communication networks of the enterprise. Santos et al (2026) viewed an EAO as an early-stage employee within an academic or complex bureaucratic setting whose initial years are defined by learning the norms, procedures, values and formal operational hierarchies required to bridge the gap between internal scientific technical personnel and external policy networks.

A synthesis of the academic and professional literature reveals that an early-career administrative officer is an entry-level professional navigating a critical phase of organisational socialisation, defined by translating baseline educational credentials into practical, system-level execution. This career stage functions across three specific core domains:

- The Operational Domain (the what): EAOs function as the primary engine for the day-to-day preservation and organisation of non-human resources. Their responsibilities are rooted heavily in compliance, clerical support, information management, budget tracking, and schedule coordination.
- The Structural Domain (the how): these officers operate within a structured hierarchy as “active learners”. They possess formal technical qualifications but lack institutional seniority. Consequently, their workflows are heavily directed by established frameworks, standard operating procedures, and senior management oversight, serving as the bridge that translates macro-level policy into micro-level action.
- The Developmental Domain (the why): this professional phase acts as a foundational pipeline, designed to shape the individual’s long-term professional identity. It is characterised by high task saturation and steep learning curves regarding institutional laws and digital tools. Successfully navigating this phase is what qualifies the officer to transition out of entry-level routines and into middle and executive management.

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Theoretical Framework

This study is anchored on Human Capital Theory and Diffusion of Innovation Theory.

Human Capital Theory - Theodore Schultz (1961); Gary Becker (1964)

The core tenet of this theory is that investments in education, vocational training, and skills development directly upgrade the capabilities, knowledge, and problem-solving capacities of individuals. These cognitive assets function as capital, resulting in increased productivity, efficiency, and adaptive capacity within the workforce. Within the discipline of Business Education, curriculum delivery is fundamentally viewed as a strategic mechanism designed to build workforce readiness and optimise human resources for institutional efficiency.

In the context of this study, Human Capital Theory directly justifies the independent variables; waste management literacy, resource conservation knowledge, and green entrepreneurial skills. Within modern business education, these variables are no longer viewed as general environmental sciences, but as specialised administrative and managerial competencies required for the 21st-century workspace. This theory posits that providing early-career administrative officers with environmental education acts as a deliberate human capital investment. Lacking this specific green human capital leaves early-career administrative officers with a critical skills gap, rendering them incapable of driving sustainable transitions. Conversely, acquiring these proficiencies directly upgrades their administrative capacity, allowing them to optimise utility budgeting, manage institutional waste and adopt eco-friendly business operations.

Diffusion of Innovations Theory - Everett Rogers (1995)

This theory explains how, why, and at what rate new ideas, operational methods, and technologies spread through a social system or organisation. Rogers categorises individuals within a system based on their willingness to adopt new practices, highlighting, that younger, freshly trained, and more technologically adept personnel typically serve as “pioneers” who act as vital change agents within traditional institutional frameworks.

In the context of this study, the adoption of sustainable business practices such as digital records management, paperless invoicing, and eco-efficient procurement represents a contemporary workplace innovation. In Oron’s administrative landscape, traditional wasteful routines are often deeply entrenched due to bureaucratic inertia. Diffusion of Innovations Theory provides the conceptual rationale for targeting early-career administrative officers as the focal demographic. Armed with green entrepreneurial skills and resource conservation knowledge, these officers possess the generational readiness to champion institutional shifts. This theory helps evaluate how environmental education serves as the vital communication channel that empowers these early-career officers to successfully introduce, implement, and diffuse sustainable business models across their respective organisations.

Empirical Framework

Shesunze (2026) examined the integration of environmental education and entrepreneurship as a strategic pathway for assessing green skills and waste-to-wealth knowledge among Nigerian youths to foster self-reliance. The study adopted a quantitative descriptive survey design. Data were collected from 378 youth participants (out of 450 sampled) drawn from the Federal Ministry of

Youth Development's Circular Economy Youth Empowerment Initiative (CEYEI) across five locations (four states and the Federal Capital Territory) using a structured questionnaire. Four research questions guided the study, and data were analysed using descriptive statistics (frequencies, percentages, mean and standard deviation). The findings revealed that while awareness of waste-to-wealth concepts is high among participating youth, practical green skills acquisition remains constrained by lack of startup capital, unstable electricity, limited mentorship, and poor access to equipment. This work is relevant to the present because, it considered environmental education variables (waste management literacy and green entrepreneurial skills) used in the present study. The research methodology is also similar.

Udemadu & Ubani (2026) examined the role of green entrepreneurship in transforming waste into wealth and promoting sustainable economic development in Anambra State. A descriptive survey research design was adopted, and data were collected from a sample of 210 respondents using purposive sampling. Data were analysed using descriptive statistics such as frequencies and percentages, while Pearson Product Moment Correlation (PPMC) was used to test the null hypotheses at .05 level of significance. The findings revealed that green entrepreneurship significantly contributes to employment generation, poverty reduction, environmental protection and efficient resource allocation. The study also identified inadequate funding, low public awareness, weak government support, and poor recycling infrastructure as major constraints affecting the growth of recycling enterprises. This work is relevant to the present study because, it considered green entrepreneurial skills, one of the core variables adopted in the present study. Also, similar methodology is adopted by both studies, although different respondents and geographical locations were used.

Anabaraonye et al. (2024) investigated the role of green entrepreneurial skills in enhancing production economy in Nigeria. The study identified that green entrepreneurial skills will help achieve the United Nations Sustainable Development Goals (SDGs) 1, 2, 4 and 13. The study defined the concept of entrepreneurship and green entrepreneurship. It further highlighted that entrepreneurial skills aim primarily to produce competent, skillful and dynamic entrepreneurs who will effectively compete in the world of work. It also identified green entrepreneurial skills as necessary amidst the global challenges of climate change, thereby enhancing the promotion economy. This work relates to the present study because it considered green entrepreneurial skills, one of the core variables covered in this study. And it also emphasized its importance in attaining SDGs.

Despite the insights provided by previous studies, a critical gap remains at the intersection of waste management literacy, resource conservation knowledge, and green entrepreneurial skills. While current literature heavily documents environmental awareness and general business training, it continuously treats them as isolated concepts. As a result, there is a shortage of empirical research explaining how a professional's theoretical knowledge actually transforms into practical, green business creation.

Furthermore, existing studies focused almost exclusively on large corporate bodies or informal, entry-level workers. This creates a significant empirical gap by overlooking GL 08-10 administrative officers. As entry-level officers, these individuals occupy a strategic position within organisations; they possess the professional education and administrative influence needed to execute policy, yet their capacity to launch and manage "waste-to-

wealth" initiatives remains completely unexamined. This study addresses these differences by establishing a clear framework that connects environmental literacy directly with green business skills among GL 08-10 administrative officers, providing a practical roadmap to turn administrative capacity into sustainable economic action.

Methodology

Research Design

This study adopted a descriptive survey research design. This design was deemed the most appropriate because it allowed the researcher to systematically collect quantitative data regarding the current status, attitudes, and behaviours of the target population without manipulating any variable (Creswell & Creswell, 2018; Charles & Etuk, 2016; Nworgu, 2015).. The study was conducted in Oron LGA, an ecologically vulnerable, resource-dependent coastal gateway in Akwa Ibom State, Nigeria. Positioned along the Cross River estuary, Oron is a high-density maritime transit zone heavily exposed to acute environmental stressors, including plastic marine pollution, oil exploration externalities, and severe coastal flooding. Oron was chosen for the study because of its unique quad-sector economic dynamic, making it a compelling coastal crucible to test how green administrative competencies function across public, maritime, financial and private workspaces. This high-density transit zone is heavily exposed to acute marine and industrial stressors, making it an urgent operational environment for studying sustainable business practices.

Population of the Study

The population of the study comprised 157 early-career administrative officers operating within Grade Level 08-10 across the identified quad sectors in Oron LGA. This specific operational cadre was purposively targeted because they function as the frontline gatekeepers of daily organisational workflows, facilities management, and digital records administration. Limiting the population to this group ensured a homogeneous sample of, tech-literate employees with career longevity to transition institutions from wasteful administrative routines to green workplace models.

To capture a comprehensive view of Oron's economic and administrative ecosystem, this study utilised a quad-sector framework. This approach guaranteed that data reflected both the public bureaucracy and the highly active commercial/maritime sectors defining this coastal region. The population was distributed across the following four distinct sectors:

1. Public Sector (Local Bureaucracy): Administrative officers within the Oron Local Government Council.
2. Public Sector (Federal Specialised Higher Education): Administrative officers at the Maritime Academy of Nigeria, Oron.
3. Private Sector (Financial Institutions): Administrative officers across commercial banks operating within Oron.
4. Private Sector (SMEs): Administrative officers within registered private enterprises and maritime logistics firms in the local economy.

Sample and Sampling Technique

Because the total population (N=157) was relatively small and highly accessible, a census sampling technique was adopted. Utilising a census approach eliminated sampling errors, maximised statistical power for subsequent regression analyses, and ensured that the findings are fully representative of the

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administrative workforce within the specified grade levels in Oron (Ebieme & Bassey, 2026).

Instrument, Validity and Reliability

The primary instrument used for data collection was a modified 4-point Likert-scale structured questionnaire titled "Environmental Education and Sustainable Business Practices Questionnaire (EESBPQ)". Scoring of the instrument was as follows: Strongly Agree (SA)-4, Agree (A)-3, Disagree (D)-2, Strongly Disagree (SD)-1, the "undecided" option was intentionally omitted to prevent central tendency bias and fence-sitting by respondents. The instrument was validated by three experts in Business Management, Business Education, and Measurement and Evaluation at the University of Uyo, Akwa Ibom State, Nigeria. Reliability was confirmed through a pilot test of ten (10) early-career administrative officers outside the main study pool, yielding an overall Cronbach's alpha coefficient of 0.89. This was deemed high enough for the study and was supported by Nunnally & Bernstein (1994) cited in Ebieme et al, 2026) who asserted that a reliability coefficient of 0.70 should be accepted particularly at the early stage of the research.

Data Collection

Data were collected through the administration of the copies of the questionnaire by the researcher and three trained research assistants during official hours. This enhanced a high retrieval rate and allowed for clarifications where necessary. Respondents were assured of the confidentiality of their responses, and those who did not wish to participate in the study were excused. 149 copies of the questionnaire out of 157 copies administered, representing 94.9% were returned in useable form.

Simple linear regression analysis was used to answer the research questions and to test null hypotheses formulated at .05 level of significance. In order to take decision as regards research questions, any R-value that fell between 0.10-0.39 was regarded as low, 0.40-0.59 moderate, 0.60-0.79 high and 0.80-0.99 very high. In terms of the hypotheses, whenever the P-value was less than .05 level of significance, the null hypotheses were rejected and also whenever the P-value was greater than .05 level of significance, the null hypotheses were accepted.

Results

Research Question One: To what extent does waste management literacy influence sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria?

Table 1: Result of Simple Linear Regression of the influence of waste management literacy on sustainable business practices among early-career administrative officers (N=149)

Variables	R	R^2	Adjusted R^2
Waste management literacy	0.606	0.367	0.363
Sustainable business practices			

The result presented in Table 1 shows the extent to which waste management literacy influences sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria. The regression coefficient (R) of 0.606 indicates a positive relationship between waste management literacy and sustainable business

practices. The coefficient of determination (R^2) of 0.367 indicates that waste management literacy accounted for 36.7% of the variation in sustainable business practices while the remaining 63.3% was attributable to other factors not included in the regression model. The adjusted R^2 value of 0.363 further indicates that waste management literacy explained 36.3% of the variation in sustainable business practices. This means that waste management literacy influences sustainable business practices to a high extent among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Research Question Two: To what extent does resource conservation knowledge influence sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria?

Table 2: Result of Simple Linear Regression of the influence of resource conservation knowledge on sustainable business practices among early-career administrative officers (N=149)

Variables	R	R^2	Adjusted R^2
Resource conservation knowledge	0.715	0.511	0.507
Sustainable business practices			

The result presented in Table 2 shows the extent to which resource conservation knowledge influences sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria. The regression coefficient (R) of 0.715 indicates a positive relationship between resource conservation knowledge and sustainable business practices. The coefficient of determination (R^2) of 0.511 indicates that resource conservation knowledge accounted for 51.1% of the variation in sustainable business practices, while the remaining 48.9% was attributable to other factors not included in the regression model. The adjusted R^2 value of 0.507 further indicates that resource conservation knowledge explained 50.7% of the variation in sustainable business practices. This means that resource conservation knowledge influences sustainable business practices to a high extent among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Research Question Three: To what extent do green entrepreneurial skills influence sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria?

Table 3: Result of Simple Linear Regression of the influence of green entrepreneurial skills on sustainable business practices among early-career administrative officers (N=149)

Variables	R	R^2	Adjusted R^2
Green entrepreneurial skills	0.814	0.663	0.661
Sustainable business practices			

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The result presented in Table 3 shows the extent to which green entrepreneurial skills influences sustainable business adoption among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria. The regression coefficient (R) of 0.814 indicates a positive relationship between green entrepreneurial skills and sustainable business practices. The coefficient of determination (R^2) of 0.663 indicates that green entrepreneurial skills accounted for 66.3% of the variation in sustainable business practices, while the remaining 33.7% was attributable to other factors not included in the regression model. The adjusted R^2 value of 0.661 further indicates that green entrepreneurial skills explained 66.1% of the variation in sustainable business practices. This means that green entrepreneurial skills influence sustainable business practices to a high extent among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Hypothesis One: Waste management literacy does not significantly influence sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria

Table 4: Result of Simple Linear Regression of the influence of waste management literacy on sustainable business practices among early-career administrative officers (N=149)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	582.87	1	582.87	85.20	.00[b]
	Residual	1005.64	147	6.84		
	Total	1588.51	148			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	21.83	.87		25.21	.00
	Waste management literacy	.53	.06	.61	9.23	.00

The result in Table 4 shows the F-ratio of 85.20 with the corresponding probability level of significance of .00 at 1 and 147 degrees of freedom. This level of significance is less than .05, on which the decision is based. With this result, the null hypothesis was rejected. The result in Table 4 also shows an unstandardized coefficient (B) of 0.53, which indicates that for every one-unit increase in waste management literacy, sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria, increases by 0.53 units. Furthermore, the t-value of 9.23 with a corresponding significance level of .00, which is also less than .05, reinforces that there is a significant influence of waste management literacy on sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Hypothesis Two: Resource conservation knowledge does not significantly influence sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria

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Table 5: Result of Simple Linear Regression of the influence of resource conservation knowledge on sustainable business practices among early-career administrative officers (N=149)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	811.12	1	811.12	153.38	.00[b]
	Residual	777.39	147	5.29		
	Total	1588.51	148			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	20.95	.72		29.05	.00
	Resource conservation knowledge	.61	.05	.72	12.39	.00

The result in Table 5 shows the F-ratio of 153.38 with the corresponding probability level of significance of .00 at 1 and 147 degrees of freedom. This level of significance is less than .05, on which the decision is based. With this result, the null hypothesis was rejected. The result in Table 5 also shows an unstandardized coefficient (B) of 0.61, which indicates that for every one-unit increase in resource conservation knowledge, sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria, increases by 0.61 units. Furthermore, the t-value of 12.39 with a corresponding significance level of .00, which is also less than .05, reinforces that there is a significant influence of resource conservation knowledge on sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria.

Hypothesis Three: Green entrepreneurial skills do not significantly influence sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria

Table 6: Result of Simple Linear Regression of the influence of green entrepreneurial skills on sustainable business practices among early-career administrative officers (N=149)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1053.78	1	1053.78	289.69	.00[b]
	Residual	534.73	147	3.64		
	Total	1588.51	148			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	22.08	.47		47.24	.00
	Green entrepreneurial skills	.55	.03	.81	17.02	.00

The result in Table 6 shows the F-ratio of 289.69 with the corresponding probability level of significance of .00 at 1 and 147 degrees of freedom. This level of significance is less than

.05, on which the decision is based. With this result, the null hypothesis was rejected. The result in Table 6 also shows an unstandardized coefficient (B) of 0.55, which indicates that for every one-unit increase in green entrepreneurial skills, sustainable business practices among early-career administrative officers in Oron Local Government Area, Akwa Ibom State, Nigeria, increases by 0.55 units. Furthermore, the t-value of 17.02 with a corresponding significance level of .00, which is also less than .05, reinforces that there is a significant influence of green entrepreneurial skills on sustainable business practices among early-career administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Discussion of Findings

The first objective of the study was to determine the extent to which waste management literacy influences sustainable business practices (SBP) among early-career administrative officers in Oron LGA, Akwa Ibom State. The result of answering research question one, and that of the corresponding hypothesis indicated that waste management literacy exerts a statistically significant positive influence on SBP among GL 08-10 administrative officers and their corporate equivalents across the quad-sector pool. This finding supports the work of Shesunze (2026) who found that waste management literacy enhanced SBP. This finding implies that when early-career administrative officers possess an advanced understanding of municipal waste segregation, environmental guidelines, and regulatory frameworks, their capacity to support sustainable operational policies increases.

The second objective of the study was to evaluate the extent to which resource conservation knowledge influences SBP among early-career administrative officers in Oron. The result of answering research question two, and that of testing the corresponding hypothesis revealed that resource conservation knowledge has a statistically significant positive influence on SBP across the studied sectors. This reveals that when early-career administrative officers in commercial banks, logistics officers at the Maritime Academy of Nigeria, Oron and local council administrators understand material life-cycles, paperless routing systems, and energy-efficient protocols, they can effectively design workflows that minimise waste.

The third objective of the study was to investigate the extent to which green entrepreneurial skills influence SBP in Oron LGA. The result showed that green entrepreneurial skills exert statistically significant predictive influence on SBA among the respondents. This finding supports a study by Udemadu & Ubani (2026) who found that green entrepreneurial skills do not just enhance SBP, but also stimulated economic development in Nigeria via waste-to-wealth transformation. When early-career administrative officers are equipped with Business Education modules; such as waste-stream monetisation, organic composting mechanics, plastic upcycling economics, or marine debris valuation, they shift from passive administrators into proactive agents of transformation. In an economy like Oron LGA, which faces unique coastal and commercial waste pressures, green entrepreneurial skills act as the vital economic mechanism that links environmental awareness with practical venture creation. This finding underscores the core argument of the study: Business Education is the multi-sectoral engine required to combine financial routing from commercial banks, MARPOL Maritime standards from the Academy, and policy execution from the local council into a profitable self-sustaining "waste-to-wealth" economic reality.

Conclusion and Recommendations

Based on the findings of the study, it was concluded that waste management literacy, resource conservation knowledge, and green entrepreneurial skills exert statistically significant influence on sustainable business practices among administrative officers in Oron LGA, Akwa Ibom State, Nigeria.

Based on the findings and conclusion of the study, the following recommendations are made:

1. The administrative heads of Oron Local Government Council, Maritime Academy of Nigeria, Commercial banks, and private enterprises should establish a joint Quad-Sector Circular Economy Taskforce to integrate mandatory waste management literacy into the onboarding of all early-career administrative officers (GL 08-10). This alliance will replace passive sanitation clean up routines with structured compliance frameworks that enforce uniform waste segregation, green banking environmental criteria, and international maritime waste standards across all four sectors.
2. Administrative heads, logistics directors, and operations managers across the four studied sectors should embed standardised Materials Life-Cycle and Resource Conservation Blueprints directly into the official job descriptions and annual performance appraisals of early-career administrative officers (GL 08-10). This mandate should consider early-career administrative officers to manage dedicated departmental "Asset Preservation Desks", giving them the authority to execute paperless workflows, energy audits, and material-tracking protocols that systematically eliminate institutional waste.
3. Local Government authorities, the Federal Ministry of Marine and Blue Economy, commercial banks (via green-finance credit lines), and private business associations should pool resources to launch a co-funded "waste-to-wealth Business Incubation Hub" within the Oron Economic Zone. This facility should integrate practical Business Education and recycling technologies such as automated plastic pressing and maritime debris monetisation, directly into the official civil service promotion and corporate advancement curricula, empowering early-career administrative officers (GL 08-10) to convert administrative capacity into revenue-generating green ventures.

Contribution to Knowledge

This study has contributed to knowledge by establishing a unified empirical framework that addresses the "knowledge-to-action" gap in Business Education, proving that theoretical waste literacy and conservation knowledge require practical green entrepreneurial skills to successfully drive sustainable business practices. It has filled a major empirical gap by shifting the academic focus away from macro-corporations and informal waste pickers toward an unstudied middle tier: Grade Level (GL) 08-10 early-career administrative officers across a quad-sector pool comprising local government, maritime sector, commercial banks and private enterprises. Finally, by contextualising this research within Oron LGA, the study has provided a rich blueprint for coastal economic transformation, demonstrating how policymakers can integrate green finance, maritime compliance (MARPOL), and administrative capacity to transition human

resources away from passive clean up routines toward a proactive, revenue-generating "waste-to-wealth" economic model.

Implications for Business Education Curriculum

The findings of this study imply that Business Education curriculum and professional development frameworks should undergo a structural shift from theoretical environmental literacy to practical green venture creation. The significant influence of green entrepreneurial skills proves that classroom-based awareness alone cannot trigger sustainable business practices; instead, instructional models should integrate technical, hands-on competencies like waste-stream monetisation, circular value-loop accounting, and automated recycling management. Furthermore, this requires civil service training boards, maritime parastatals, commercial banks, and private firms to abandon passive routine clean up exercises and instead embed active green business modules into the career advancement pipelines of GL 08-10 early-career administrative officers and corporate managers. Ultimately, Business Education should serve as the multi-sectoral engine that equitably connects environmental capacity with financial frameworks and maritime standards, transforming routine administrative workforce capacity into a proactive, revenue-generating "waste-to-wealth" coastal economy in Oron, Akwa Ibom State, Nigeria.

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