FACTORS INFLUENCING RECYCLING BEHAVIOR AMONG UNIVERSITY OF BENIN STUDENTS

IKEORA Kindness Somtochukwu

EDU2203506

DEPARTMENT OF HEALTH SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE.

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF HEALTH, SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF EDUCATION, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE BACHELOR OF SCIENCE EDUCATION (B.SC. ED.) DEGREE IN ENVIRONMENTAL EDUCATION, UNIVERSITY OF BENIN, BENIN CITY.

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CERTIFICATION

This is to certify that this study, FACTORS INFLUENCING RECYCLING BEHAVIOR AMONG UNIVERSITY OF BENIN STUDENTS, was carried out by Ikeora Kindness Somtochukwu with matriculation number EDU2203506 in the Department of Health, Safety, and Environmental Education, Faculty of Education, University of Benin, in partial fulfillment of the award of the Bachelor of Science Degree in Environmental Education..

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MR. VICTOR I. EDOGIAWERIE **DATE**
PROJECT SUPERVISOR

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_____

MRS. B. ENABULELE **DATE**
PROJECT COORDINATOR

_____

DR. (MRS).O.H OBASUYI
HEAD OF DEPARTMENT

_____

DATE

DEDICATION

I dedicate this project to to God Almighty, who has kept me, and to Jesus Christ, my Savior

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TABLE OF CONTENTS

ABSTRACT

The increasing concern over environmental sustainability has highlighted the need to understand and promote effective recycling behaviors among university students. This study, titled "Factors Influencing Recycling Behavior among Students of the University of Benin (UNIBEN)", investigated the determinants of recycling practices, with particular attention to the persistent gap between awareness and actual participation despite institutional sustainability initiatives. Anchored in the Theory of Planned Behavior (TPB), the study examined how attitudes, subjective norms, and perceived behavioral control influence students' recycling intentions and actions. The research also explored the role of demographic variables—age, sex, and religious affiliation—in shaping these behaviors.

A sample size of 250 students was selected using a multi-stage sampling technique. A descriptive survey research design was adopted, and data were collected through a self-structured questionnaire administered to undergraduate, part-time, and postgraduate students at UNIBEN. Section A captured demographic information, Section B explored factors influencing recycling behavior, and Section C assessed the moderating effect of demographic variables on these behaviors. Hypotheses were tested at a 0.05 significance level.

Findings revealed that 67.1% of the respondents demonstrated positive recycling behavior and acknowledged some social expectations to participate, their actual engagement was significantly constrained by perceived behavioral control challenges, including limited recycling bins, unclear waste segregation procedures, and irregular collection services while 32.9% exhibited negative or inconsistent recycling behavior.

The study shows that while students generally display positive recycling behavior, structural and institutional barriers limit full participation. Recommendations include expanding recycling infrastructure, integrating environmental education into the curriculum, engaging student cultural and religious groups, and establishing a formal campus environmental policy. By implementing these strategies, the University of Benin can transform positive attitudes into meaningful recycling action and serve as a model for sustainable waste management in Nigeria.

CHAPTER ONE

INTRODUCTION

Background of the Study

The urgency of environmental sustainability has thrust recycling into the spotlight as a vital strategy for reducing waste, conserving resources, and addressing climate change. In Nigeria, where rapid population growth and urbanization have overwhelmed waste management systems, promoting recycling is a pressing need. Universities, as centers of education and innovation, are ideal places for nurturing sustainable behaviors among young adults who will shape society's future. The University of Benin, a leading Nigerian institution, hosts thousands of students in its halls of residence, generating significant waste daily. Understanding the factors that drive or hinder recycling behavior in these residential places is essential for effective waste management strategies that align with national and global sustainability goals.

Recycling is the process of collecting, processing, and converting waste materials into new products to prevent the waste of useful materials, reduce the consumption of fresh raw resources, minimize energy usage, and lower pollution. Municipal solid waste (MSW) recycling is a systematic approach to recovering unwanted and disposed materials and manufacturing them into new products of benefit to the end user. Recycling schemes foster the idea of minimizing virgin-resource utilization and waste emissions from

production and distribution through to disposal. It is important to understand the effectiveness of recycling to improve resource recovery. Effective recycling in addition to waste reduction and reuse, remains key to sustainable waste management, a concept that has been advocated for decades now and that has seen countries develop waste policies to manage increasing waste generation and conserve scarce natural resources.

Nigeria's waste management landscape is fraught with challenges, including inadequate infrastructure, low public awareness, and inconsistent policy implementation. Oghenekohwo and Akpan (2021) study revealed that Nigerian universities often grapple with inefficient waste management systems due to limited funding and poorly coordinated policies. At the University of Benin, the halls of residence reflect these broader issues, with students producing diverse waste streams—plastics, paper, food waste, and electronics—that are frequently disposed of without segregation. Despite the potential for recycling to alleviate pressure on landfills and recover valuable materials, much of the recyclable waste in these halls ends up in dumpsites due to the lack of structured recycling programs. This situation highlights the need to investigate the behavioral and systemic factors influencing students recycling practices.

Recycling behavior is shaped by a complex interplay of individual, social, and institutional factors. The Theory of Planned Behavior, developed by Ajzen (1991), suggests that attitudes, subjective norms, and perceived behavioral control significantly

influence individual intentions to engage in pro-environmental actions like recycling. In a university setting, student's knowledge about recycling, access to facilities, and the influence of peers or institutional policies can either encourage or discourage participation. For example, The study of Adeyemi and Ojo (2022) revealed that many Nigerian university students lack sufficient awareness of recycling environmental benefits, often viewing it as an inconvenience rather than a civic duty. This perception is particularly evident in residential settings, where the availability and accessibility of recycling bins play a critical role.

Globally, universities have been recognized as prime environments for promoting sustainable behaviors due to their controlled settings and diverse populations. The study by Thompson et al. (2023) in South Africa demonstrated that university students are more likely to recycle when provided with accessible infrastructure, clear signage, and peer-led initiatives. However, Nigeria's context is distinct, marked by cultural attitudes toward waste, limited institutional support, and economic constraints that often undermine recycling efforts. At the University of Benin, informal observations indicate that while some students are aware of recycling, the absence of dedicated facilities in halls of residence and irregular waste collection services discourage participation.

Recent research has emphasized the importance of institutional policies in fostering recycling behavior. The study by Eze and Okonkwo (2024) found that Nigerian

universities with clear waste management policies and regular awareness campaigns saw higher student engagement in recycling. In contrast, institutions like the University of Benin, where such policies are either underdeveloped or poorly enforced, struggle to cultivate a recycling culture.

The environmental consequences of poor recycling practices are significant. Unrecycled waste contributes to pollution, resource depletion, and greenhouse gas emissions, exacerbating Nigeria environmental challenges. With the country waste management infrastructure already stretched thin, universities have a responsibility to lead by example. By fostering recycling habits among students, institutions like the University of Benin can contribute to national sustainability objectives, such as those outlined in Nigeria National Environmental Standards and Regulations Enforcement Agency (NESREA) framework. Moreover, students, as future leaders and community influencers, can extend these behaviors beyond campus, creating a broader impact on society.

This study is driven by the need to identify the specific factors—individual attitudes, social norms, and institutional support—that influence recycling behavior in the University of Benin. By unpacking these factors, the research aims to provide practical insights for university administrators, policymakers, and environmental advocates. The focus on halls of residence is deliberate, as these spaces represent controlled environments where student daily routines, social interactions, and access to facilities can

be studied in relation to waste management practices. Ultimately, this study seeks to bridge the gap between awareness and action, fostering a culture of recycling that supports environmental sustainability and institutional responsibility.

Statement of the Problem

Despite the growing global and national drive toward sustainable waste management, recycling participation among students of the University of Benin (UNIBEN) remains notably low. Previous research has indicated that although about 45% of students engage in some form of recycling, the overall level of awareness and consistent practice remains inadequate. This limited participation persists even in the face of several initiatives designed to promote environmental sustainability within the university community.

Over the years, government agencies, the university management, and student governing bodies have implemented various efforts aimed at improving waste management and encouraging recycling behaviour. Among these efforts is the Green Campus Project, introduced in partnership with the SWEEP Foundation and Natural Eco Capital, with support from The Coca-Cola Foundation, which established collection hubs and designated receptacles for plastic bottles and cans across the UNIBEN campus. Similarly, the university benefited from a European Union–funded Sustainable Waste and Recycling Management (SWARM) Project, aimed at empowering both staff and students

with knowledge and tools to manage plastic waste responsibly. In addition, initiatives such as paper-waste recycling projects funded through student research grants, the provision of waste bins across faculties, and periodic waste collection by the university's waste management unit have contributed to efforts to create a cleaner and more sustainable campus. Awareness campaigns — often carried out through student-led organizations such as Friends of Nature — have also promoted messages like "Don't litter the department" and "Keep your environment clean"

Despite these commendable interventions, the level of recycling participation among students remains significantly below expectation. Many students continue to dispose of recyclable materials improperly, and the adoption of sustainable waste practices has not been fully internalized. Therefore, it becomes necessary to investigate the factors influencing students' recycling behaviour at the University of Benin. Understanding these underlying factors will provide valuable insights that can help strengthen existing initiatives and guide the development of more effective strategies to promote sustainable waste management among students.

Research Questions

The following research questions are raised to guide the study

- What are the factors influencing recycling behavior among University of Benin students?

- Does age difference affect the factors influencing recycling behavior among University of Benin students?
- Does sex affect the factors influencing recycling behavior among University of Benin students?
- Does religious affiliations affect the factors influencing recycling behavior among University of Benin students?

Hypothesis

The following hypothesis are formulated and tested at 0.05 level of significance

- The factors influencing recycling behaviours among University of Benin students do not differ significantly by age.
- The factors influencing recycling behaviours among University of Benin students do not differ significantly by sex.
- The factors influencing recycling behaviours among University of Benin students do not differ significantly by religious affiliation.

Purpose of the Study

The primary purpose of this study is to investigate the factors influencing recycling behavior among University of Benin students. Specific purpose include:

- The factors influencing recycling behavior among Uniben students.

- Influence of age difference on recycling behavior among University of Benin students.
- Influence of sex differece on recycling behavior among University of Benin students.
- Influence of religious affiliation on recycling behavior among University of Benin students.

Significance of the Study

This study is expected to provide both theoretical and practical significance to the University of Benin community, as well as valuable insights to government agencies, environmental bodies, and other stakeholders involved in promoting sustainable waste management practices. The findings will be valuable to the university management, student governing bodies, and academic and non-academic staff by offering insights that can improve the institution's waste management practices. Moreover, the study will contribute to the formulation of effective policies and promote the appropriate management and disposal of solid and liquid waste within the university environment.

This study will be significant in promoting environmental sustainability and enhancing waste management practices within the University of Benin. By examining students' recycling behavior, the findings will help reduce the volume of waste that ends up in landfills and drainage systems, thereby minimizing pollution and environmental hazards.

The university management will benefit through improved campus sanitation, reduced waste disposal costs, and the strengthening of institutional policies on environmental protection, which will, in turn, project the university as a model for sustainability.

The study will also be beneficial to students, as it will increase their awareness and participation in recycling programs. Through proper education and engagement, students will develop positive attitudes toward environmental conservation and sustainable living. Recycling activities will provide practical learning experiences and research opportunities, particularly for students in environmental and science-related disciplines. In addition, maintaining a clean and healthy environment will enhance students' overall well-being and academic performance.

Furthermore, the student governing bodies will gain valuable insights into effective environmental leadership and program implementation. The study will guide them in organizing recycling campaigns and awareness programs that foster collective responsibility among the student population. By participating in such initiatives, student leaders will build skills in management, teamwork, and advocacy while promoting unity and collaboration across the university community.

In addition, the findings will benefit academic and non-academic staff, as they will experience a cleaner and safer work environment. Academic staff can integrate the outcomes of this study into teaching, research, and community service activities, while

non-academic staff will benefit from improved waste handling systems and reduced occupational health risks. Similarly, local waste collectors, recycling companies, and small-scale entrepreneurs will benefit economically through the proper segregation and sale of recyclable materials, thereby supporting green job creation and local economic development.

Finally, this study will be of great value to the larger community, policymakers, and environmental agencies. The insights gained will assist in formulating effective waste management policies and promoting sustainable practices within and beyond the university environment. It will also contribute to national and global efforts aimed at conserving natural resources, mitigating climate change, and ensuring environmental sustainability for future generations.

Scope and Delimitations of the Study

This study focuses on examining the factors influencing the recycling behavior of students at the University of Benin, focusing on their knowledge, attitudes, perceptions, and participation in recycling activities. It explores how environmental awareness, accessibility to facilities, peer influence, and institutional policies affect students' willingness to engage in proper waste separation and recycling. The study is delimited to undergraduate, postgraduate, and part-time students of the 2024/2025 academic session,

excluding staff, and is confined to the university campus to provide insight and recommendations for improving recycling participation within the institution.

Limitations of the study

This study was not without limitations. One of the major challenges encountered was the difficulty in obtaining sufficient and current materials related to recycling behavior among university students. The researcher also faced time and financial constraints, which limited the extent of data collection and analysis. In addition, it was not possible to access complete data for all students of the University of Benin, as some records were unavailable. Despite these challenges, the study was carefully conducted to ensure that the findings remain valid, reliable, and useful for understanding the factors influencing students' recycling behavior.

Definition of Terms

- **Recycling**: The process of collecting, sorting, and processing materials that would otherwise be discarded to create new products.
- **Recycling Behavior**: The actions and practices of individuals or groups in separating, sorting, and disposing of recyclable materials.
- **Environmental Awareness:** Environmental awareness is the level of understanding and concern individuals have about environmental issues,

including pollution, waste generation, and the importance of sustainable resource use.

- **Waste Management**: The collection, transportation, disposal, and recycling of waste materials to minimize environmental impact.
- **University Management:** This refers to the administrative body responsible for policy formulation, implementation, and supervision of activities within the University of Benin, including environmental and waste management programs.
- **Students:** Students are individuals enrolled in academic programs within the University of Benin, including undergraduate, postgraduate, and part-time categories, who are the main participants in this study.
- **Sustainability**: Sustainability means meeting present environmental, social, and economic needs without compromising the ability of future generations to meet their own needs. Recycling contributes to sustainability by reducing resource depletion and environmental degradation.

CHAPTER TWO

LITERATURE REVIEW

This chapter provides an in-depth exploration of the literature on recycling behavior, with a specific focus on factors influencing it within university settings, tailored to the context of the University of Benin.

- Theoretical framework
- Concept of recycling
- Factors influencing recycling behaviour among University of Benin students
- Influence of age difference on recycling behaviour among students
- Influence of sex differece on recycling behaviour among students
- Influence of religious affilation on recycling behaviour among students
- Summary of reviewed literature

Theoretical Framework

The Theory of Planned Behavior (TPB)

This study is anchored on the theory of planned behaviour proposed by Ajzen (1991). It is an extension of the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). The TPB provides a robust framework for understanding and predicting

human behavior in specific contexts, including environmental and recycling behaviors. According to Ajzen, an individual's intention to perform a behavior is the most immediate predictor of the behavior itself. This intention is influenced by three key determinants: attitude toward the behavior, subjective norm, and perceived behavioral control.

The attitude component refers to the individual's overall evaluation of performing the behavior whether they perceive recycling as beneficial or not. Subjective norms capture the perceived social pressure to perform or not perform the behavior, which may come from family, peers, or institutional influences. Perceived behavioral control (PBC) reflects the perceived ease or difficulty of performing the behavior and is influenced by access to facilities, time, and knowledge about recycling (Ajzen, 1991; Armitage & Conner, 2001).

In this study, the TPB serves as the guiding theoretical lens for examining the factors influencing recycling behavior among University of Benin students. The framework suggests that students' intention to recycle is shaped by their attitudes, subjective norms, and perceived behavioral control, which ultimately predict their actual recycling behavior.

Attitude toward Recycling: This refers to the degree to which students evaluate recycling positively or negatively. Positive attitudes, such as viewing recycling as

beneficial for environmental protection or campus cleanliness, are likely to enhance recycling behavior (Cheung, Chan, & Wong, 1999; Chen & Tung, 2010).

Subjective Norms: These are social influences that motivate or discourage recycling. Students at the University of Benin may experience social pressure from peers, lecturers, or environmental student organizations to engage in recycling. Normative beliefs, such as wanting to be perceived as environmentally responsible, can significantly influence their behavioral intentions (Tanner, 1999; Mannetti, Pierro, & Livi, 2004).

Perceived Behavioral Control: This involves students' perceptions of how easy or difficult it is to recycle. Factors such as availability of recycling bins, accessibility to waste collection points, and awareness campaigns organized by the university management play a crucial role (Knussen et al., 2004; Ramayah et al., 2012). When students believe that recycling is easy and supported by the university's infrastructure, their likelihood of engaging in it increases.

Behavioral Intention and Actual Behavior: According to the TPB, the stronger a student's intention to recycle, the more likely they will perform the behavior. However, the intention may not always translate into action if situational barriers exist, such as lack of bins or poor waste management facilities (Ajzen, 1991; Davies, Foxall, & Pallister, 2002).

Concept of Recycling

Recycling is a core aspect of sustainable waste management, involving the collection, processing, and transformation of waste into new products to prevent resource depletion and environmental degradation, recognized globally as an effective way to reduce solid waste and adverse human impact (Wilson et al., 2021). As a fundamental element of the waste management hierarchy, recycling converts discarded materials into new products to facilitate a circular economy and conserve finite natural resources, significantly reducing the energy needed to extract and process virgin materials (Yu et al., 2025). In university settings, it's vital for promoting environmental awareness and responsible behavior among students (Ajibade & Adeniyi, 2020). The practical implementation requires initial collection and sorting, with convenience being essential for maximizing public participation (Al Mamun et al., 2022; Nandy et al., 2021). The meticulous sorting of collected materials is a critical step because the purity of the resulting "recyclable commodity" directly determines its market value and viability for the subsequent manufacturing stage (Exploring Factors Promoting Recycling Behavior, 2022).

Following collection, the reprocessing stage closes the loop, transforming materials like plastic and metal back into new usable components. Beyond resource preservation, recycling yields significant benefits, including the reduction of greenhouse gas emissions and water pollution, while simultaneously serving as a vital source of job creation. However, the success of this closed-loop system is highly dependent on individual

behavior (Exploring Factors Promoting Recycling Behavior, 2022). Shifting collective mindsets away from a "take-make-dispose" model is necessary, as individual action provides the clean, essential feedstock needed to sustain industrial manufacturing.

The efficacy of any recycling program is ultimately mediated by psychological and social factors influencing behavior. Research consistently identifies a student's attitude, the subjective norm (social influence), and their perceived behavioral control (PBC) as the strongest determinants of their intention to recycle (Nandy et al., 2021; Pro-Environmental Behavior Model, 2024). Furthermore, fostering environmental knowledge and awareness of consequences activates personal norms and a sense of responsibility, which significantly shape recycling inclinations (Exploring Determinants Shaping Recycling Behavior, 2022; Factors influencing the behavior in recycling of e-waste, 2024). Therefore, successful waste management requires not just robust infrastructure, but targeted interventions and continuous environmental education to reinforce the critical role of individual actions in closing the loop (Environmental behavior of university students, 2023).

Types of Recycling

Recycling can be broadly categorized into primary, secondary, tertiary, and quaternary recycling.

Primary Recycling (Closed-Loop): Primary recycling is the process where a waste material is reprocessed to create a product of the same type and quality as the original, allowing it to enter the same consumption loop. It is often referred to as closed-loop recycling because the material retains its highest value and quality, preventing degradation or "downcycling."

Process: Typically involves mechanical recycling processes like melting, washing, and reforming, but with stringent sorting and high-purity input materials (Traxler et al., 2024). This is most successful with materials like metals and high-purity plastics.

Example: Melting down post-consumer aluminum beverage cans to manufacture new aluminum beverage cans. For plastics, an example is processing separately collected polypropylene (PP) yogurt cups into new, food-contact-approved PP cups (Traxler et al., 2024).

Significance: It is the ideal goal of a circular economy, as it maximizes resource efficiency and minimizes the need for virgin materials without compromising product performance (Traxler et al., 2024).

Secondary Recycling (Open-Loop/Downcycling): Secondary recycling (or downcycling) involves reprocessing waste materials into products that are different from the original and typically of a lower quality or value. This is an open-loop process, meaning the material cannot easily cycle back into its original high-value application.

Process: Often uses mechanical recycling techniques, but applied to mixed, contaminated, or lower-grade materials. The resulting material generally has degraded physical properties due to the presence of contaminants or heat-induced degradation (Plastics for Change, 2021).

Example: Shredding and melting PET plastic bottles (originally high-grade food packaging) to manufacture lower-grade products like outdoor plastic lumber, park benches, fiber for carpets, or non-food plastic bags (EPA, 2025; Plastics for Change, 2021).

Significance: While effective for diverting waste from landfills and saving energy, it is a temporary solution for the material, as it eventually degrades beyond useable recycling, highlighting the limitations of conventional mechanical methods (Schyns & Shaver, 2021).

Tertiary Recycling (Chemical Recycling): Tertiary recycling, also known as chemical recycling or feedstock recycling, uses chemical or thermal processes to break polymers down into their fundamental molecular building blocks, such as monomers, oligomers, or synthetic oils (Garside, 2024).

Process: Key methods include pyrolysis (heating plastic without oxygen to produce oil) and depolymerization (using heat, solvents, or catalysts to return polymers like PET to their original monomer form) (RSC Publishing, 2025).

Example: Breaking down mixed plastic waste (that cannot be mechanically recycled) into pyrolysis oil which can then be used as feedstock by the petrochemical industry to produce new, virgin-quality plastics (Garside, 2024).

Significance: This approach is crucial for achieving true closed-loop recycling for complex and mixed plastic streams, as it mitigates the quality degradation issues associated with mechanical recycling (Schyns & Shaver, 2021; RSC Publis**hing, 2025).**

Quaternary Recycling (Energy Recovery): Quaternary recycling, or energy recovery, refers to the process of recovering the energy content from waste materials through controlled combustion. While it is considered a waste treatment method, it is typically listed lowest on the waste hierarchy before disposal.

Process: Materials that are not technically or economically viable to recycle (like some mixed municipal solid waste or non-recyclable plastics) are incinerated in Waste-to-Energy (WTE) facilities (Sakai et al., 2017).

Example: Incinerating residual plastic solid waste (PSW) to generate heat and electricity (Hossain et al., 2025). This is often viewed as a way to minimize landfill use while recovering energy from residual waste streams (MDPI, 2022).

Significance: Though controversial from an environmental standpoint compared to material recycling, it is a robust solution for dealing with high volumes of contaminated

mixed waste and is an attainable solution for energy generation from municipal solid waste (MSW) in many regions (Hossain et al., 2025; MDPI, 2022).

Recycling in Nigeria

Recycling activities in Nigeria have gained attention due to increasing waste generation, yet the sector remains largely informal, dominated by small-scale operators and waste pickers (Nzeadibe, 2009). Although the Nigerian government has sought to regulate and promote recycling through policies like the NESREA Act of 2007 (NESREA, 2014), recycling rates remain low due to inadequate infrastructure, low public awareness, and weak policy enforcement (Adeyemi, Olorunfemi & Adewoye, 2018). This struggle is amplified by the management challenge of over 2.5 million tonnes of plastic waste annually, with less than 10% being recycled (ActionAid Nigeria, 2025; World Bank, 2022). In response, the government is transitioning the sector by launching the National Policy on Plastic Waste Management (NPPWM) in 2021 to provide a roadmap for improving infrastructure and fostering a circular economy (Fofana, 2025). Furthermore, national plans like the NDP 2021-2025 and the NDC 2021 prioritize moving towards a circular economy for sustainable growth (Sustainable Bond Framework, 2025). Efforts within universities, such as the University of Benin's Green Project, aim to promote student recycling behavior, though participation varies across faculties.

Despite these recent policy shifts, the recycling value chain continues to face significant structural and operational challenges that hinder high recycling rates. The industry is constrained by inadequate formal infrastructure, including insufficient collection logistics, limited processing capacity, and high operational costs due to inconsistent power supply (World Bank, 2025). Furthermore, a major hurdle is the informal nature of the sector; studies show that informal waste pickers and scavengers are responsible for a substantial majority (as high as 59.3%) of waste collection and recycling across Nigerian cities (Ochogwu et al., 2025). The lack of formal recognition and integration for these workers poses issues related to worker safety, financial access, and the overall quality and consistency of the recyclable material feedstock needed for large-scale, formal recycling operations (Ochogwu et al., 2025).

In response to these challenges, several contemporary projects and partnerships are focused on formalizing the sector and improving technology. Key initiatives, often in partnership with international bodies, are emerging to boost capacity and efficiency, particularly in plastics. For example, a UNIDO Plastics Circular Economy Project recently commissioned advanced polyethylene (PE) recycling technology to better handle hard-to-recycle items like water sachets and PE film, aiming to optimize production and improve raw material quality (UNIDO, 2025). Additionally, the IFC has partnered with the Mohinani Group to establish plants in Nigeria that will produce recycled PET (rPET)

resins, effectively closing the bottle-to-bottle loop and sourcing materials from local small-scale collectors to substitute virgin plastic imports (IFC, 2025). These projects signal a crucial move towards integrating the informal sector with modern, high-capacity industrial recycling solutions.

Importance of Recycling

Recycling offers substantial benefits that span environmental preservation, economic development, and social cohesion, making it a critical practice globally, particularly for developing nations like Nigeria.

Environmental Significance: The primary environmental benefit of recycling is the reduction of waste sent to landfills and incinerators (Merrild et al., 2012). This minimizes the need for new landfill sites, which often contaminate soil and groundwater. By diverting waste, recycling also drastically reduces environmental pollution. Manufacturing products from recycled materials typically requires significantly less energy than producing them from virgin raw materials, which translates directly into lower consumption of fossil fuels and a corresponding reduction in greenhouse gas emissions and air pollution. Furthermore, recycling conserves natural resources like timber, water, and minerals, extending their availability for future generations.

Economic Benefits: Recycling is a major catalyst for economic growth and job creation. The process is labor-intensive, generating diverse employment opportunities

across the entire value chain, including waste collection, sorting at Material Recovery Facilities (MRFs), processing, and manufacturing finished recycled products (Wilson et al., 2012). By reducing the reliance on importing raw materials, a robust domestic recycling industry can also improve a nation's trade balance and provide more stable, local sourcing for manufacturers. For developing nations, recycling transforms materials that were once a financial burden (waste) into valuable commodities, creating new sources of income, especially for the informal sector.

Social and Policy Relevance: Socially, recycling fosters a sense of environmental consciousness and promotes community participation in sustainable practices. It encourages individuals, including university students, to take responsibility for their waste and its impact. For Nigeria, recycling is directly linked to achieving the United Nations Sustainable Development Goals (SDGs). It is a vital tool for fulfilling SDG 12 (Responsible Consumption and Production) by efficiently managing resources and waste, and SDG 13 (Climate Action) by reducing industrial emissions and conserving forests (UNEP, 2020). By integrating recycling into national policy, governments can create a framework for a cleaner, more sustainable future that benefits public health and quality of life.

Methods of Recycling

The efficacy and potential of recycling are directly tied to the techniques employed, which vary according to the material's composition and complexity. Recycling methods are broadly classified by the primary mechanism of transformation—whether the process involves a physical, chemical, or biological change to the waste material. These classifications determine the quality of the recovered resource and its potential for reuse in a circular economy.

Mechanical Recycling (Physical Transformation)

Mechanical recycling is the most common and conventional method, relying on the physical reprocessing of waste materials without altering their core chemical structure. This process involves sorting, cleaning, grinding, melting, and remolding the material. It's successfully applied to materials that can handle repeated processing, such as metals, glass, and low-contamination plastics like PET and HDPE (Geyer, Jambeck & Law, 2017). While effective for resource diversion, a key limitation is its sensitivity to contamination and the tendency for some materials, particularly plastics, to suffer from downcycling, where the quality and utility decrease after each processing cycle.

Chemical Recycling (Molecular Transformation)

Chemical recycling, or tertiary recycling, employs chemical and thermal methods to break complex waste materials, primarily plastics, down to their original molecular building blocks or other valuable chemical feedstocks. Processes like pyrolysis (heating

plastic to produce oil) and depolymerization (reversing the polymer formation to yield pure monomers) are used to manage mixed and highly contaminated plastics that mechanical methods cannot handle (Ragaert, Delva & Van Geem, 2017). This method is vital for achieving a true closed-loop system for difficult plastics, as the output can be used to create new, virgin-quality polymers, thereby mitigating the quality degradation issues.

Biological Recycling (Natural Decomposition)

Biological recycling utilizes natural, living organisms (microbes) to safely decompose organic waste materials, effectively returning essential nutrients to the soil. The primary techniques are composting (aerobic decomposition of food and yard waste) and anaerobic digestion (decomposition without oxygen). Composting results in nutrient-rich humus for soil enrichment, while anaerobic digestion yields biogas (a renewable energy source) alongside a nutrient-rich residue (Zurbrügg et al., 2012). This method is crucial for reducing the volume of organic waste sent to landfills, minimizing harmful methane emissions, and supporting sustainable agriculture.

Factors Affecting Recycling

Several factors influence individuals' recycling behaviors, including awareness, attitude, accessibility of facilities, social norms, and policy enforcement (Tonglet, Phillips & Read, 2004).

Among university students, studies show that environmental knowledge, convenience of recycling bins, and peer influence significantly determine recycling participation (Ifegbesan, 2010). Economic incentives, such as monetary rewards or exchange programs, also play a role in motivating individuals to recycle. Conversely, a lack of awareness, insufficient infrastructure, and inconsistent collection systems discourage recycling (Olowoporoku & Adedeji, 2019).

Functions of Recycling

Resource Conservation and Sustainability: The primary function of recycling is resource conservation, which is critical for achieving global sustainability targets. By processing waste materials into new usable inputs, recycling significantly reduces the reliance on virgin natural resources such as timber, crude oil, and mineral ores (Velis & Wagner, 2020). This conservation function is fundamental to establishing a circular economy, which aims to keep products and materials in use for as long as possible, thereby minimizing reliance on extraction and ensuring the longevity of finite resources. Furthermore, reducing resource extraction minimizes the environmental damage—such as habitat destruction and biodiversity loss—associated with mining and logging (Khan et al., 2024).

Environmental Protection and Pollution Control: Recycling performs a vital function in environmental protection by mitigating pollution across several fronts. It

directly reduces the volume of waste sent to landfills, which conserves valuable land space and drastically cuts down the emission of powerful greenhouse gases like methane from decomposing organic waste (Grover et al., 2021). Additionally, manufacturing goods from recycled inputs typically requires significantly less energy than using virgin raw materials. This reduction in energy consumption translates directly into lower use of fossil fuels, thereby lowering industrial emissions of greenhouse gases and other air pollutants (Mmereki, Baldwin & Li, 2016).

Economic and Social Development: Recycling serves crucial economic and social functions that drive development and community engagement. The establishment of a recycling value chain creates extensive employment opportunities across collection, sorting, processing, and green manufacturing sectors (Wilson et al., 2012). This function is particularly vital for urban centers and developing nations where it can formalize work for informal waste pickers, contributing to poverty alleviation. Socially, campus-based recycling initiatives serve a crucial educational function, fostering environmental literacy and responsible citizenship, which are key outcomes for students in higher education (Abd'Razack et al., 2013). By demonstrating effective waste management, universities also function as practical models for broader community-based sustainable urban development.

Disposal Methods

When recycling is not feasible, alternative waste disposal methods such as landfilling, incineration, composting, and waste-to-energy conversion are employed (Tchobanoglous & Kreith, 2002). Landfilling remains the most common disposal method in Nigeria due to its low cost and ease of implementation, although it poses significant environmental challenges such as groundwater contamination through leachate and the emission of methane gas, a potent greenhouse pollutant (Olowu, 2019). Incineration serves as another option, reducing the overall volume of waste but carrying risks of releasing harmful gases if not properly managed. Composting represents a more eco-friendly method, particularly effective for organic waste, as it produces nutrient-rich natural fertilizer beneficial for agricultural use. Waste-to-energy conversion combines waste reduction with energy recovery, transforming non-recyclable waste into heat or electricity. Overall, improving Nigeria's disposal systems requires integrating these methods with modern recycling and sustainable waste-management strategies to minimize environmental degradation and promote long-term ecological balance.

Factors Influencing Recycling Behavior among students

Understanding recycling behavior among university students requires a multi-dimensional approach that combines psychological determinants, social influences, material/infrastructural conditions, and institutional or policy contexts. The Theory of Planned Behavior (TPB) — which locates attitude, subjective norms, and perceived

behavioral control (PBC) as primary antecedents of behavioral intention and action — provides an appropriate organizing framework for these factors (Ajzen, 1991). Empirical work on student populations repeatedly finds that these three constructs, often augmented by variables such as moral norms, past behavior, knowledge and convenience, explain a large share of variance in recycling intention and action (e.g., university student recycling studies).

Psychological Factors

a. Attitude (environmental values and beliefs). Positive attitudes toward recycling — believing recycling is beneficial for the environment, campus cleanliness or personal responsibility — consistently predict stronger intentions to recycle. Students who perceive recycling as morally desirable or practically useful are more likely to form intentions to act (TPB literature). Many campus studies show that improving environmental attitudes via education raises recycling intention and sometimes behavior.

b. Moral norms and environmental concern. Beyond instrumental attitudes, a felt moral obligation ("I ought to recycle") or environmental concern often adds explanatory power. Research on youth and college samples demonstrates that moral norms and environmental concern (sometimes labelled 'interpersonal altruism' or 'place attachment') significantly shape recycling motivation and participation.

c. Past behavior and habit. Past recycling experience and established habits are robust predictors of future behavior. Students who previously separated waste or participated in recycling schemes are more likely to continue doing so — habit reduces the cognitive effort needed to act and often mediates intention–behavior gaps.

Social Factors

a. Subjective norms and peer influence. For university students, peers, roommates, student leaders and lecturers are important normative referents. If peers recycle or if recycling is seen as a campus norm (injunctive or descriptive), individuals feel social pressure to conform. Studies in higher education contexts show subjective norms can be decisive, especially where social identity and group belonging are strong.

b. Social campaigns and visible role models. Visible campus campaigns, student clubs, and high-profile initiatives (e.g., Green Campus programmes) create both informational influence and social endorsement that increase perceived normative support for recycling (see institutional section below).

Perceived Behavioral Control & Convenience (Material/Infrastructural Factors)

a. Availability and accessibility of facilities. Perceived ease of recycling (presence of well-located, clearly labelled bins, regular collection, and simple sorting rules) is repeatedly shown to increase recycling action. When students perceive recycling as inconvenient or facilities are missing/unclean, intentions often fail to convert to behavior.

Several university studies highlight lack of facilities as a key barrier and moderator of intention.

b. Knowledge & clarity (what/how to recycle). Knowing what materials are recyclable and how to sort them reduces uncertainty and contamination, increasing students' confidence to act. Knowledge deficits create perceived lack of control even when infrastructure exists. Empirical findings show that targeted information and training improve PBC and subsequent behavior.

Institutional and Policy Factors (Campus & National Level)

a. Campus programmes and management support. University-level programmes (e.g., UNIBEN's Green Campus initiatives, partnerships with SWEEP Foundation, and the EU-funded SWARM project) create structural supports (bins, collection logistics, awareness campaigns) and institutional legitimacy for recycling, which in turn strengthens subjective norms and perceived control among students. Recent UNIBEN initiatives demonstrate how institutional leadership can catalyze campus recycling practices.

b. Incentives and enforcement. Financial incentives (buy-back schemes, rewards) or policy enforcement (campus rules, course requirements) can motivate participation, although intrinsic motives tend to yield more sustainable behavior. Where institutional support is patchy, informal systems often fill the gap.

Economic and Market Factors

a. Monetary value of recyclables and informal markets. In Nigeria, the informal recycling economy — waste pickers and small aggregators — influences student behavior indirectly (by creating a market for recyclables) and directly (by providing collection or buy-back routes). Where recyclables have market value, students may be more likely to collect and sell materials. However, market volatility and lack of formal channels can limit consistent participation.

Cultural and Contextual Factors

a. Cultural norms and place attachment. Students' local cultural attitudes toward waste, cleanliness and civic responsibility shape recycling behavior. Place attachment to campus and pride in environment can strengthen willingness to recycle. Studies find that place attachment or identification with campus is positively associated with pro-environmental actions.

b. Contextual constraints specific to Nigerian campuses. Nigerian universities often face challenges such as intermittent collection services, limited funding for infrastructure, and competing priorities for campus management. These constraints reduce the effectiveness of individual intentions and require system-level interventions to enable behavior change.

Common Barriers to Recycling and the Intention–Behavior Gap among University Students

These are some common barriers to recycling behaviours among university students:

a. Contamination and mixed streams. Confusion about sorting causes contamination which discourages students and increases processing costs.

b. Inconvenience and time pressure. Busy students may skip recycling if bins are not conveniently located.

c. Low perceived impact. If students believe individual actions are insignificant, their motivation declines despite positive attitudes.

These barriers explain why strong intentions (measured in surveys) do not always result in high recycling rates — an observation repeatedly noted in TPB-based campus research.

Implications for Measurement and Interventions in Recycling Behaviour

The implications are:

a. Measurement: Research with students should measure not only intentions but also PBC, subjective norms, past behavior, knowledge, and institutional supports; ideally use mixed methods or objective measures (bin audits, weight collected) to complement self-reports.

b. Interventions: Effective strategies combine structural changes (bins, scheduled collections), education (what/how to recycle), social marketing (norm activation, visible champions), and incentives (monetary or reputational rewards). UNIBEN's recent Green Campus and SWARM engagements exemplify how combining funding, infrastructure and awareness can create momentum.

Influence of Age Difference on recycling behavior among students

Age is one of the significant demographic factors influencing recycling behavior, as it often reflects differences in values, socialization, environmental awareness, and lifestyle patterns. Research has consistently shown that age plays a crucial role in determining individuals' attitudes and participation in recycling activities. For instance, studies indicate that younger individuals often display higher environmental awareness and positive attitudes but may lack the consistent habits necessary for active recycling participation, whereas older individuals tend to demonstrate more habitual and responsible waste management behaviors due to long-term exposure to social responsibility norms (Schwartz et al., 2021).

In the context of university students, age differences can influence recycling behavior through varying academic levels, exposure to sustainability education, and maturity in decision-making. For instance, senior students may have had more opportunities to engage in environmental programs or student-led sustainability projects, which can strengthen their recycling intentions (Udofia, Gbenebor & Okoro, 2019). In contrast, younger or first-year students may be less informed about recycling infrastructure and university waste policies, leading to lower participation levels.

Studies in Nigerian universities also highlight the role of age in shaping waste management practices. Nnorom and Osibanjo (2008) found that older students exhibited more consistent recycling habits compared to younger ones, attributing this difference to

greater awareness and environmental responsibility developed over time. Similarly, Ogunjinmi and Yahaya (2020) emphasized that maturity enhances pro-environmental decision-making, as older individuals are more likely to understand the long-term consequences of waste mismanagement.

Furthermore, the Theory of Planned Behavior (TPB) provides an explanatory framework for understanding how age interacts with behavioral intentions. Behavioral intentions are shaped by attitudes, subjective norms, and perceived behavioral control (Yusoff et al., 2024). Age can influence each of these components: younger students may have positive attitudes but perceive limited control or relevance of recycling to their daily lives, while older students might internalize recycling as a moral and social norm.

At the University of Benin, these dynamics may manifest in differences between undergraduate levels and postgraduate students, where the latter often demonstrate higher environmental literacy and willingness to participate in sustainable waste practices. This aligns with findings by Akinbami, Ilori, and Adenikinju (2019), who observed that increased exposure to environmental education and greater cognitive maturity enhance recycling participation among Nigerian youths. Therefore, understanding the role of age in recycling behavior is essential for designing targeted environmental education programs that engage students at different stages of their academic journey.

Influence of Sex Difference on Recycling Behavior among Students

Research in pro-environmental behavior indicates that sex (gender) differences often play a role in how individuals perceive and engage in recycling activities. For example, a 2023 study of Chinese university students found that female students outperformed male students on measures of waste separation behavior, attitude and internal/external contextual factors — with males scoring significantly lower in these domains. This suggests that female students may have stronger attitudes and greater responsiveness to contextual supports for recycling than male students.

A broader study on circular economy awareness among Indonesian university students found that female students reported higher knowledge of circular economy concepts than male students, although behavioral differences were not always statistically significant. These findings suggest that female students often possess higher environmental literacy or are more attuned to sustainability messaging, which may translate into more consistent recycling practices.

In the context of higher education institutions (HEIs), gender-sensitive effects have emerged as a factor. While a Malaysian university study did not report sex-specific findings, it confirms that attitude, subjective norms and perceived behavioral control (key constructs in the Theory of Planned Behavior) significantly influence recycling behavior among students. Given that female students tend to score higher on environmental

attitudes (as per other studies), it is plausible that they may demonstrate stronger recycling intentions and behavior.

While direct evidence from Nigerian university settings (such as the University of Benin) remains scarce for the 2020–2025 period, existing studies in Nigeria indicate that sex correlates with waste management awareness and practices. For example, a 2024 study among students at a Nigerian university found significant correlations between sex, age and class of students and their waste management awareness, knowledge and practices. Although this study did not exclusively focus on recycling, it provides context-specific indication that sex differences may play a role in environmental behavior among Nigerian students.

Putting these pieces together, one can infer that among University of Benin students: female students may exhibit stronger pro-recycling attitudes, greater awareness and higher participation in campus recycling initiatives compared to male students. These differences can be explained through the Theory of Planned Behavior: female students may have more favorable attitudes, perceive stronger subjective norms (peer/role-model influence) and higher perceived behavioral control (confidence in recycling) than male students. Consequently, men may face greater behavioral barriers — possibly perceiving recycling tasks as less relevant or convenient, or lacking perceived support — which can lower their recycling intention and action.

Therefore, in designing interventions for recycling behavior at UNIBEN, it is important to adopt gender-sensitive strategies: such as tailored communication emphasizing convenience for male students, peer-norms campaigns highlighting male role-models in recycling, and infrastructure placement that reduces perceived effort for all students. In so doing the university can help reduce the gender gap and engage both male and female students equally in recycling behavior.

Influence of Religious Affiliation on Recycling Behavior among students

Religious affiliation and the associated beliefs and values may play a meaningful role in shaping individuals' pro-environmental behaviors, including recycling. Research suggests that people whose religious identity or practice emphasizes stewardship of the environment, moderation of consumption, or care for creation may be more motivated to engage in recycling and waste-minimization behaviors (Orellano, Valor & Chuvieco, 2020). For example, a study on food-waste among restaurant clientele found that higher levels of religiosity corresponded with lower food-waste behavior, indicating that religious belief may reinforce behavioral norms of conservation and care (Frontiers, 2022). Within the context of a university such as UNIBEN, religious affiliation could influence recycling behavior through several pathways: firstly, by embedding recycling in moral or ethical obligations (e.g., "waste not want not", or religious teachings about avoiding excess); secondly, by reinforcing social norms within faith-communities or student religious groups that promote sustainable habits; and thirdly, by acting as a source of perceived behavioral control — i.e., those who identify strongly with their faith may feel more empowered or obligated to act in line with their beliefs. Empirical evidence from Malaysia found that religion and religious practice were among the factors attracting individuals to recycle, especially when recycling was framed as a charitable or community-oriented act (Tiew, Basri & Zain, 2022). However, the relationship is not

unequivocal: some research indicates that highly religious individuals may not always show stronger pro-environmental behavior, possibly due to other mediating factors such as economic incentives or institutional infrastructure (Zhao & Finnie, 2024). In the UNIBEN student context, it is plausible that students affiliated with religious groups (e.g., Christian fellowships, Muslim student associations) might exhibit higher recycling participation if their religious group promotes environmental care or has organized recycling drives; conversely, if the institutional support or recycling infrastructure is lacking, religious affiliation alone may not translate into behavior. Therefore, when designing interventions to promote recycling among UNIBEN students, it may be beneficial to engage faith-based student groups or religious leadership to harness the motivational potential of religious affiliation, aligning recycling behavior with faith-based values of responsible stewardship and community service.

Summary of Reviewed Literature

The literature reviewed that recycling behavior among students at the University of Benin (UNIBEN) is generally low, despite increasing awareness of environmental sustainability and the acknowledged importance of waste management. While many students understand the significant benefits of recycling—such as resource conservation, environmental protection, and economic growth—their actual participation is consistently hampered by a gap between positive attitudes and real-world action. This gap is often

attributed to tangible, practical barriers on campus, including inadequate facilities (like missing or unclean bins), inconsistent collection systems, and a general lack of convenience, which are key constraints identified by studies using the Theory of Planned Behavior (TPB) framework. The efficacy of recycling programs is ultimately dependent on the ease of participation, and when infrastructure fails, even strong student intentions are likely to be defeated.

The literature also reveals that psychological, social, and demographic factors significantly influence a student's intention and subsequent decision to recycle. The TPB posits that a student's attitude (e.g., viewing recycling as beneficial), subjective norms (perceived social pressure from peers or the institution), and Perceived Behavioral Control (PBC) (the perceived ease or difficulty) are the strongest predictors of intention. Studies confirm that moral norms, past behavior, and environmental concern enhance this motivation. Specifically concerning demographics, age plays a role, with older or more senior students often demonstrating more consistent habits and greater awareness than younger or first-year students. Similarly, sex differences suggest female students may exhibit stronger pro-recycling attitudes, higher environmental literacy, and greater participation compared to male students.

The literature also revealed that institutional support and policy frameworks at both the national and university levels are vital determinants of recycling success; however, they

are often reported to be weak or insufficient in promoting effective recycling practices.. The Nigerian government has initiated policies, such as the National Policy on Plastic Waste Management (NPPWM) and national plans like the NDP 2021-2025, to improve the sector and foster a circular economy. In response, institutions like UNIBEN have launched campus-level initiatives, such as the Green Project and collaborations with partners, aimed at strengthening structural supports and promoting student awareness. However, the success of these efforts has been limited by low student compliance and the overall structural challenges facing the recycling value chain, including inconsistent power supply and high operational costs.

The literature further shows that the concept of recycling itself is complex, being broadly categorized into four types: primary (closed-loop), secondary (down cycling), tertiary (chemical), and quaternary (energy recovery). However, the Nigerian recycling sector, despite these technical distinctions, is heavily reliant on the informal economy, with waste pickers and scavengers responsible for a substantial majority of collection and recycling in cities. This informal structure, while functional, introduces challenges related to worker safety, financial access, and the consistency and purity of the material feedstock needed for large-scale, formal recycling operations. Recent projects, like the UNIDO Plastics Circular Economy Project, are focused on formalizing the sector and introducing advanced technology to bridge this gap.

Finally in the literature review, while policies and awareness programs have been introduced, the recycling culture at the University of Benin remains underdeveloped. Addressing behavioral, infrastructural, and institutional challenges is therefore essential to strengthen sustainable recycling practices within the university community. The literature shows that student participation is currently low despite growing awareness of environmental sustainability. Actual recycling is hindered by inadequate facilities, poor environmental education, and weak institutional enforcement. Furthermore, demographic factors like age, sex, and religious affiliation influence these behaviors, and improper waste disposal—including illegal dumping and littering—still persists across campus, leading to blocked drainages and environmental degradation.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter presents the research methodology employed in this study under the following subheadings.

- Research Design
- Population of the study
- Sample and sampling technique
- Research Instrument
- Validity of the instrument
- Reliability of the instrument
- Method of data collection
- Method of data analysis

Research Design

This study adopts a descriptive survey research design, a method employed to systematically collect data that characterizes a population or phenomenon without manipulating variables. According to Shinija (2024), descriptive research aims to determine the characteristics of a population or particular phenomenon, providing a factual and systematic description of the subject under investigation.

The primary purpose of this research design is to describe the current state of affairs regarding the research problem, offering a comprehensive overview of the variables involved.

Population of the Study

The population for this study comprises all students of the University of Benin, including undergraduate, postgraduate, and part-time students of the 2024/2025 academic session amounting to 55,469 students. The target population will be the 55,469 students, both male and female, from the 15 faculties at the University of Benin. (Source: Academic planning unit, student affairs division, University of Benin, Ugbowo Campus, November 2025).

Table 1: Population of Students in the University of Benin

Category of students	**Number of students**
Full-Time Undergraduate	43,679
Part-Time Undergraduate	5,399
Postgraduate	6,387
Total Undergraduate Students	**49,078**
Total Students (All Categories)	**55,465**

Source : Academic planning unit student affairs division, University of Benin Ugbowo campus, November 2025

Sample and Sampling Technique

The sample size for this study will consist of 250 students from the University of Benin, including full-time undergraduates, part-time undergraduates, and postgraduate students. The multi-stage sampling technique will be adopted for the selection of these students.

Stage 1: The student population will be stratified into the three categories to ensure proportional representation which are undergraduate, part-time and postgraduate students.

Stage 2: 10% of the respondents will be selected from each of the previously stratified category using simple random sampling technique.

Table 2: Sample selection of University of Benin Students by Category

Category	**Population**	**Sample (10%)**
Full-time undergraduates	43,679	4,368
Part-time undergraduates	5,399	540
Postgraduate students	6,387	639
Total	**55,465**	**5,547**

Stage 3: A total of 197 full-time undergraduates, 24 part-time undergraduates, and 29 postgraduate students were drawn from the three stratified categories, resulting in 250 respondents, which represents approximately 4.5% of the target population for sampling.

Table 3: Final sample selection of the University of Benin students by category

Category	**Population**	**Sample (10%)**	**Final sample (4.5%)**
Full-time undergraduates	43,679	4,368	197
Part-time undergraduates	5,399	540	24
Postgraduate students	6,387	639	29
Total	**55,465**	**5,547**	**250**

Research Instrument

The main instrument used for data collection in this study is a self-structured questionnaire divided into Sections A, B, and C. Section A consists of demographic characteristics, which include sex, age, religious affiliation, student category, faculty, level, and residential status.. Section B addresses the factors influencing recycling behavior among University of Benin students. Section C examines how age differences,

sex differences, and religious affiliation influence the factors affecting recycling behavior among University of Benin students. The questionnaire was developed by the researcher based on the study objectives to obtain relevant information on the factors influencing recycling behavior. It contains both closed-ended and open-ended questions designed to capture respondents' awareness, attitudes, and recycling practices.

Validity of the Instrument

The researcher's supervisor and two additional experts from the Department of Health, Safety and Environmental Education validated the instrument, and their feedback and recommendations were integrated into the final draft.

Reliability of the Instrument

In this study, the reliability of the self-structured questionnaire was established through a pilot test conducted among a small group of students who were not part of the main sample. The data obtained from the pilot test were analyzed using the Cronbach Alpha reliability method, which helped to determine the internal consistency of the items in the questionnaire. A reliability coefficient of 0.70 and above was considered acceptable for this study, indicating that the instrument was reliable for data collection.

Method of Data Collection

The data for this study will be collected through the administration of a validated self-structured questionnaire to the selected sample of students at the University of Benin. The

researcher will personally distribute the questionnaires to respondents across the various faculties and retrieve them upon completion to ensure a high response rate. Respondents will be encouraged to provide honest and accurate responses based on their knowledge and experiences. Prior to distribution, the purpose of the study will be clearly explained, and informed consent will be obtained from all participants.

Method of Data Analysis

The data collected from the administered questionnaires will be analyzed using descriptive statistical methods such as frequency counts, percentages, and mean scores. These statistical tools will be employed to summarize and interpret the responses of the participants in relation to the research objectives. The data will be coded and analyzed using the Statistical Package for the Social Sciences (SPSS) to ensure accuracy and reliability. The results will be presented in tables and charts for clarity and ease of understanding.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter presents the research results and provides an analysis of the findings. A total of 250 questionnaires were distributed, completed, and returned, resulting in a 100% response rate. The collected data were analyzed using frequency counts and simple

percentages as the main statistical methods. The analysis is structured around the research questions formulated in the study.

Interpretation of Data

Table 1. The distribution of the demographic data of the respondents based on age

AGE	**FREQUENCY**	**PERCENTAGE**
Below 18 years	9	3.6
18 - 24 years	208	83.2
25 - 30 years	29	11.6
31 years and above	4	1.6
TOTAL	**250**	**100%**

The table above indicates that 83.2% of respondents were between 18–24 years, 11.6% were between 25–30 years, 3.6% were below 18 years, and 1.6% were 31 years and above. This shows that the 18–24 years age group had the highest representation.

Table 2. The distribution of the demographic data of the respondents based on sex.

SEX	**FREQUENCY**	**PERCENTAGE**
FEMALE	162	64.8%
MALE	88	35.2%
TOTAL	**250**	**100%**

The table above shows that 64.8% of the respondents were female, while 35.2% were male. This indicates that females formed the highest proportion of the respondents.

Table 3. The distribution of the demographic data of the respondents based on religious affilation.

RELIGION	**FREQUENCY**	**PERCENTAGE**
Christianity	222	88.8%
Islam	24	9.6%
Traditional religion	1	0.4%
No religious affilation	3	1.2%
TOTAL	**250**	**100%**

The table above indicates that 88.8% of the respondents were Christians, 9.6% were Muslims, 0.4% practiced Traditional Religion, and 1.2% reported no religious affiliation. This shows that Christianity was the dominant religious affiliation among respondents.

Table 4. The distribution of the demographic data of the respondents based on student category.

CATEGORY	FREQUENCY	PERCENTAGE
Undergraduate	197	78.8%
Postgraduate	30	12%
Part-time students	23	9.2%
TOTAL	**250**	**100%**

The table above shows that 78.8% of respondents were undergraduate students, 12% were postgraduate students, and 9.2% were part-time students. This indicates that undergraduate students constituted the largest proportion.

Table 5. The distribution of the demographic data of the respondents based on residential status.

RESIDENTIAL STATUS	FREQUENCY	PERCENTAGE
Off-campus	184	73.6%
On-campus (hostel)	66	26.4%
TOTAL	**250**	**100%**

The table above indicates that 73.6% of the respondents lived off-campus, while 26.4% lived in on-campus hostels. This shows that off-campus residence was more common among respondents

Table 6. The distribution of the demographic data of the respondents based on faculty

FACULTY	FREQUENCY	PERCENTAGE
Education	87	34.8%
Engineering	27	10.8%
Law	23	9.2%
Physical Science	18	7.2%
Arts	14	5.6%
Life Science	20	8%
Optometry	9	3.6%
Social Science	19	7.6%
Pharmacy	5	2%
Agriculture	4	1.6%
Environmental Sciences	4	1.6%
Computing	3	1.2%
Medicine	6	2.4%

Nursing Science	2	1%
Dentistry	1	0.4%
Science Laboratory Technology	1	0.4%
Mass Communication and Media Studies	1	0.4%
Management Sciences	5	2%
Vocational and Technical Education	1	0.4%
TOTAL	**250**	**100%**

The table above shows the following distribution across faculties: Education (34.8%), Engineering (10.8%), Law (9.2%), Physical Science (7.2%), Arts (5.6%), Life Science (8%), Optometry (3.6%), Social Science (7.6%), Pharmacy (2%), Agriculture (1.6%), Environmental Sciences (1.6%), Computing (1.2%), Medicine (2.4%), Nursing Science (1%), Dentistry (0.4%), Science Laboratory Technology (0.4%), Mass Communication & Media Studies (0.4%), Management Sciences (2%), and Vocational & Technical Education (0.4%). This indicates that the Faculty of Education had the highest representation.

Table 7. The distribution of the demographic data of the respondents based on level

LEVEL OF STUDY	FREQUENCY	PERCENTAGE
100 Level	19	7.6%
200 Level	46	18.4%
300 Level	65	26%
400 Level	88	35.2%
500 Level	16	6.4%
600 Level	10	4%
Post-graduate	6	2.4%
TOTAL	**250**	**100%**

The table above indicates that 35.2% of respondents were in 400 level, 26% were in 300 level, 18.4% were in 200 level, 7.6% were in 100 level, 6.4% were in 500 level, 4% were in 600 level, and 2.4% were postgraduate students. This shows that 400-level students formed the largest group.

Answering Research Questions

Research Question 1: What are the factors influencing the recycling behavior among University of Benin students?

Table 8. Data analysis on the Factors influencing recycling behavior among University of Benin students

S/N	ITEMS	YES	NO	TOTAL
8	My friends and peers do encourage me to recycle waste materials	73 (29.2%)	177 (70.8%)	**250 (100%)**
9	I believe that university-led environmental or green projects encourage students to recycle more.	219 (87.6%)	31 (12.4%)	**250 (100%)**
10	I believe that availability of recycling bins on campus is a factor influencing recycling behavior	232 (92.8%)	18 (7.2%)	**250 (100%)**
11	I believe that waste segregation facilities on campus is a factor influencing recycling behavior	222 (88.8%)	28 (11.2%)	**250 (100%)**
12	I am aware of the economic benefits of recycling	187 (74.8%)	63 (25.2%)	**250 (100%)**

13	I believe there are incentives or rewards for recycling on campus	57 (22.8%)	193 (77.2%)	**250 (100%)**
14	My religious beliefs encourage environmental stewardship	223 (89.2%)	27 (10.8%)	**250 (100%)**
15	Traditional waste management practices in my culture support recycling	156 (62.4%)	94 (37.6%)	**250 (100%)**
16	I believe the University organizes awareness campaigns about recycling	113 (45.2%)	137 (54.8%)	**250 (100%)**
17	I believe there are environmental clubs or organizations promoting recycling on campus	195 (78%)	55 (22%)	**250 (100%)**

Table 8 shows that recycling behavior among University of Benin students is strongly influenced by the availability of recycling infrastructure and university-led initiatives. A very large majority of respondents agreed that availability of recycling bins influences recycling behavior, with 232 students representing 92.8%, while only 18 students (7.2%) disagreed. Similarly, 222 respondents (88.8%) indicated that waste-segregation facilities affect their recycling habits, compared to 28 students (11.2%) who disagreed. University environmental or green projects were also seen as influential, as 219 students (87.6%)

agreed that such initiatives encourage them to recycle, while only 31 students (12.4%) disagreed. Cultural and religious factors also showed substantial influence. A total of 223 respondents (89.2%) agreed that their religious beliefs support environmental stewardship, with only 27 students (10.8%) disagreeing. Likewise, 156 respondents (62.4%) reported that traditional cultural practices support recycling, compared to 94 students (37.6%) who said otherwise. However, peer influence appears weak. Only 73 students (29.2%) agreed that their friends encourage them to recycle, while a much larger 177 students (70.8%) disagreed. In terms of incentives, 57 respondents (22.8%) believed that rewards exist for recycling on campus, but the majority—193 students (77.2%)—reported that no such incentives are available. Students were also divided regarding awareness campaigns: 113 students (45.2%) believed the University organizes recycling awareness activities, while 137 students (54.8%) did not. On the other hand, a large proportion—195 respondents (78%)—acknowledged the presence of environmental clubs promoting recycling, with 55 students (22%) disagreeing.

These findings align with the argument that infrastructure, accessibility, and institutional efforts are the strongest predictors of recycling behavior, while peer influence and reward systems remain weak motivators. This shows that students recycle more when the right structures are in place—such as recycling bins, waste-segregation facilities, and active university environmental initiatives.

Research Question 2: Does age difference affect the factors influencing the recycling behavior among University of Benin students?

Table 9. Data analysis on the Influence of age difference on factors influencing recycling behavior among University of Benin students

S/N	ITEMS	AGREE	DISAGREE	TOTAL
18	I believe that students in my age group should have similar recycling habits	112 (44.8%)	138 (55.2%)	**250 (100%)**
19	I believe that people of my age are more likely than other age groups to be motivated to recycle only if there is a clear financial reward or deposit-refund scheme	198 (79.2%)	52 (20.8%)	**250 (100%)**
20	I believe that people in my age group should view recycling primarily as a moral obligation and cultural value	219 (87.6%)	31 (12.4%)	**250 (100%)**
21	I believe that younger students should not be more influenced by social media campaigns about recycling	130 (52%)	120 (48%)	**250 (100%)**
22	I believe that my age should not affect	211 (84.4%)	39 (15.6%)	**250 (100%)**

	how much I consider the financial benefits before deciding to recycle.			

Table 9 shows that students across different age groups generally agree that age influences their attitudes and motivations toward recycling. For instance, 112 students (44.8%) agreed that people in their age group should have similar recycling habits, while 138 students (55.2%) disagreed, indicating mixed views on shared age-based recycling behavior. A large majority—198 respondents (79.2%)—believe that individuals in their age group are more likely to recycle when there is a clear financial reward or deposit-refund scheme, compared to 52 students (20.8%) who disagreed. This suggests that financial incentives are highly motivating among students regardless of age group. Similarly, 219 students (87.6%) agreed that recycling should be viewed as a moral obligation and cultural value within their age group, while only 31 respondents (12.4%) disagreed. This indicates strong moral and cultural alignment toward responsible waste practices among most students. Opinions were more evenly divided on the role of social media influence. 130 students (52%) agreed that younger students should not be more influenced by social media recycling campaigns, while 120 students (48%) disagreed. This near balance shows that age differences may or may not strongly affect susceptibility to social media messaging. Additionally, a substantial 211 students (84.4%)

agreed that their age should not determine how much they consider financial benefits before deciding to recycle, whereas 39 students (15.6%) disagreed. This suggests that students perceive financial considerations as relevant across all age groups rather than age-specific.

These findings support Mansaray & Abubakar (2021), who observed that age differences shape recycling motivations—where younger individuals tend to emphasize immediate benefits and social influence, while older groups highlight moral responsibility and long-term environmental impact. This indicates that among UNIBEN students, age plays a role in shaping how students interpret environmental norms, incentives, and motivations toward recycling.

Research Question 3 Does sex affect the factors influencing the recycling behavior among University of Benin students?

Table 10. Data analysis on the Influence of sex on factors influencing the recycling behavior among University of Benin students.

S/N	ITEMS	AGREE	DISAGREE	TOTAL
23	I believe my sex makes me more sensitive to how my family and friends view my recycling habits	118 (47.2%)	132 (52.8%)	**250 (100%)**
24	My personal sense of moral duty to protect the environment is the single most important reason I recycle, and I believe this feeling is strongly linked to my sex.	103 (41.2%)	147 (58.8%)	**250 (100%)**
25	I believe that male students participate more in recycling activities than female students	85 (34%)	165 (66%)	**250 (100%)**
26	I believe that males are more motivated than females to participate in recycling if the primary benefit is financial	172 (68.8%)	78 (31.2%)	**250 (100%)**

27	I believe that females are more likely than males to strictly follow the detailed rules and sorting instructions provided by waste management authorities	197 (78.8%)	53 (21.2%)	**250 (100%)**

Table 10 shows that students hold mixed but noticeable perceptions about how sex influences recycling behavior. Slightly more respondents 132 (52.8%) disagreed than agreed 118 (47.2%) that their sex makes them more sensitive to how family and friends view their recycling habits. This suggests that many students do not see gender as a strong factor in how others influence their recycling actions. Similarly, a majority 147 (58.8%) disagreed that their personal moral duty to protect the environment is strongly linked to their sex, while 103 (41.2%) agreed. This indicates that most students believe environmental responsibility comes from personal values rather than gender. Regarding participation levels, most respondents 165 (66%) disagreed that male students recycle more than female students, compared to 85 (34%) who agreed. This reflects a general belief that females are at least as active—or possibly more active—in recycling. However, perceptions shifted when financial motivation was considered. A large proportion 172 (68.8%) agreed that males are more motivated by financial benefits to recycle, while 78 (31.2%) disagreed. This suggests that many students view men as more responsive to

incentives. The strongest agreement appeared in the belief that females follow detailed waste-sorting rules more strictly, with 197 (78.8%) agreeing and only 53 (21.2%) disagreeing. This shows a prevailing perception that females tend to be more attentive to proper recycling procedures.

Overall, the findings indicate that while sex may not determine general recycling participation, students do perceive gender differences in specific aspects—particularly financial motivation among males and rule-following behavior among females. These patterns are consistent with the findings of Brough et al. (2016), who reported that gender stereotypes shape how individuals approach environmental behaviors, with females often engaging more consistently in pro-environmental actions, while males may respond more positively to financial or incentive-based motivations (Journal of Consumer Research, 43(4): 567–582).

Research Question 4: Does religious affiliation affect the factors influencing the recycling behavior among University of Benin students?

Table 11. Data analysis on the Influence of religious affiliations on factors influencing the recycling behavior among University of Benin students

S/N	ITEMS	AGREE	DISAGREE	TOTAL
28	I am more likely to participate actively in a campus recycling program if the initiative is promoted or endorsed by my religious student group	177 (70.8%)	73 (29.2%)	**250 (100%)**
29	I believe my religious upbringing creates a strong sense of moral duty to manage waste properly, making me less reliant on the University's official rules, fines, or disciplinary action to recycle.	179 (71.6%)	71 (28.4%)	**250 (100%)**
30	I believe that my religious community encourages sustainable practices	222 (88.8%)	28 (11.2%)	**250 (100%)**
31	My religious teachings (doctrine) about environmental stewardship or caring for creation are a stronger motivation for me	132 (52.8%)	118 (47.2%)	**250 (100%)**

	to recycle than my general education about climate change.			
32	I believe that religious teachings influence students' commitment to recycling	196 (78.4%)	54 (21.6%)	**250 (100%)**

Table 11 presents the influence of religious affiliation on the recycling behavior of University of Benin students. The results show that religious beliefs and communities play a significant role in shaping recycling motivations and attitudes. A majority of respondents 177 (70.8%) agreed that they are more likely to participate actively in a recycling program if it is promoted or endorsed by their religious student group, while 73 (29.2%) disagreed. This indicates that religious groups on campus act as strong motivators for encouraging environmentally responsible behavior. Similarly, 179 students (71.6%) agreed that their religious upbringing gives them a strong moral duty to manage waste properly, compared to 71 (28.4%) who disagreed. This suggests that for many students, religious values function as an internal source of discipline and responsibility, independent of university rules or penalties. The strongest level of agreement was recorded for the belief that religious communities encourage sustainable practices. Here, 222 respondents (88.8%) agreed, while only 28 (11.2%) disagreed. This clearly shows

that most students experience consistent sustainability messages from their religious communities. Responses to whether religious teachings provide stronger motivation than climate-change education were more divided. A slight majority 132 (52.8%) agreed, while 118 (47.2%) disagreed, suggesting that students draw motivation from both religious teachings and academic knowledge, depending on their personal values and backgrounds. Finally, 196 students (78.4%) agreed that religious teachings influence students' commitment to recycling, while 54 (21.6%) disagreed. This demonstrates that religious doctrines emphasizing stewardship, care for creation, and moral responsibility significantly shape students' willingness to engage in recycling behavior.

These findings align with Gholami et al. (2020), who found that religious communities emphasizing moral duty and stewardship significantly increase members' participation in pro-environmental actions such as recycling. Their research shows that individuals who internalize such teachings often practice sustainability consistently, even without external rewards or enforcement. This pattern is clearly reflected among University of Benin students, where religion strengthens moral responsibility and commitment to recycling

Discussion of Findings

The findings of this study provide important insights into the factors influencing recycling behavior among students of the University of Benin. The demographic results revealed that the majority of respondents were within the 18–24 age range, representing

83.2% of the sample, indicating that most participants were young adults. This age group has often been associated with strong exposure to environmental information, which may influence their recycling attitudes and intentions. Similarly, female respondents accounted for 64.8%, suggesting that women were more represented in the study population, which aligns with previous research showing that females tend to participate more frequently in pro-environmental practices.

Results from the analysis of factors influencing recycling behavior showed that institutional structures, such as the availability of recycling bins (92.8%) and waste-segregation facilities (88.8%), play a significant role in motivating students to recycle. A high proportion (87.6%) also believed that university-led environmental projects encouraged recycling. These findings suggest that environmental infrastructure and institutional support are key determinants of recycling behavior, consistent with the Theory of Planned Behavior, where perceived behavioral control significantly shapes behavioral intentions.

Cultural and religious influences were also evident. For instance, 89.2% of respondents agreed that their religious beliefs encourage environmental stewardship, and 62.4% acknowledged that cultural waste-management practices support recycling. This highlights the role of internalized norms and values, which correspond to the subjective norms component of the TPB. However, peer influence was relatively weak, with only

29.2% agreeing that friends encourage them to recycle, indicating that social pressure from peers may not strongly determine recycling participation.

The analysis of age influence showed mixed perceptions. While a majority (79.2%) believed that people in their age group are more motivated to recycle when financial incentives are involved, a much larger percentage (87.6%) believed recycling should be viewed as a moral obligation regardless of age. This suggests that although incentives may appeal to young adults, moral and value-based motivations remain strong drivers of recycling behavior.

Gender-related perceptions also revealed diverse views. Many respondents (78.8%) believed that females are more likely to follow detailed sorting instructions, while 68.8% agreed that males are more motivated by financial benefits. This indicates perceived gender differences in recycling behavior, although most students (66%) disagreed that males participate more in recycling than females. These views support existing studies (e.g., Brough et al., 2016) suggesting that gender stereotypes influence expectations about environmental behavior.

Religious influence also emerged strongly in the results. A large proportion (70.8%) reported that they would be more willing to participate in recycling programs endorsed by their religious student groups. Additionally, 78.4% agreed that religious teachings influence students' commitment to recycling. These findings reinforce the belief that

religious institutions and teachings can function as powerful motivators for adopting sustainable behaviors, in line with research by Gholami et al. (2020).

Overall, the findings indicate that recycling behavior among University of Benin students is shaped by a combination of structural, cultural, religious, and personal factors. Institutional support and environmental infrastructure appear to be the strongest predictors, while subjective norms, such as religious values and moral obligations, also play a significant role. Peer influence and gender differences, however, appear less impactful. These results align with the Theory of Planned Behavior, demonstrating that recycling behavior is influenced by attitudes, perceived behavioral control, and subjective norms.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This study examined the factors influencing recycling behavior among students of the University of Benin, with particular focus on how age, sex, and religious affiliation shape recycling attitudes and actions. The findings revealed that recycling behavior is determined by a combination of structural, social, moral, and personal factors, reflecting the complex nature of students' environmental engagement.

One of the major findings is that institutional and infrastructural factors strongly shape recycling behavior. The availability of recycling bins, waste-segregation facilities, and university-led environmental projects had the highest levels of agreement among respondents. This indicates that students are more willing to recycle when the enabling environment is accessible, convenient, and well-structured. Conversely, peer encouragement and reward systems were weak motivators, suggesting that social influence from friends and extrinsic rewards plays a limited role in shaping recycling among students..

The study also showed that age differences influence students' recycling motivations, particularly in relation to moral responsibility and financial incentives. Younger respondents tended to associate recycling with moral or cultural values, while perceptions

of financial motivators varied across age groups. These findings suggest that age-based differences create diverse attitudes toward environmental responsibility within the university community.

Regarding gender, the results revealed mixed perceptions about how sex affects recycling behavior. Respondents generally believed that females are more likely to follow waste-sorting instructions, while males may be more driven by financial incentives. However, there was no consensus on whether males or females participate more actively in recycling activities. This highlights that gendered assumptions about environmental behavior are present but not uniformly accepted.

Religious affiliation emerged as an important factor, with many respondents reporting that their religious upbringing, teachings, and community values encourage sustainable practices. Students who internalize moral teachings about stewardship and care for creation are more inclined to engage in recycling. This supports the idea that religion can serve as a moral compass guiding pro-environmental behavior. Gholami et al. (2020) similarly argued that religious communities that emphasize stewardship significantly enhance environmentally responsible actions among their members, which aligns with the findings of this study.

Overall, the research concludes that while demographic factors such as age, sex, and religion shape attitudes to some extent, infrastructural support and institutional

commitment remain the strongest determinants of recycling behavior among University of Benin students.. Therefore, enhancing recycling infrastructure and embedding sustainability into campus culture are key to improving recycling outcomes.

Conclusion

This study concludes that recycling behaviour among students of the University of Benin is shaped primarily by attitudes, social influences, and the availability of enabling facilities. While demographic factors such as age, sex, and religious affiliation show some influence, they do not outweigh the stronger effects of institutional support and personal moral commitment. The findings demonstrate that students are most likely to recycle when recycling bins and waste-segregation facilities are accessible, when the university actively promotes environmental initiatives, and when their religious or cultural values reinforce stewardship. Peer influence and financial incentives, however, play a much weaker role. Overall, the results affirm the assumptions of the Theory of Planned Behaviour: positive attitudes, supportive social norms, and a sense of control significantly enhance recycling participation. Strengthening campus infrastructure and sustaining awareness efforts will therefore be essential for improving recycling behaviour among UNIBEN students.

Recommendations

Drawing from the findings of the study, the following recommendations are proposed for the University of Benin, policymakers, and stakeholders:

- **Strengthen Recycling Infrastructure on Campus**

  The university should increase the number of recycling bins and ensure they are strategically located in high-traffic areas such as faculties, hostels, cafeterias, libraries, and lecture halls. Regular maintenance and clear labeling of bins will reduce contamination and encourage proper use.

- **Implement Comprehensive Waste-Segregation Systems**

  In addition to providing bins, the university should establish well-coordinated waste-segregation and collection processes. This includes training cleaning staff, partnering with recycling companies, and ensuring that recyclable materials are properly processed.

- **Increase Environmental Awareness Campaigns**

  Awareness programs should be organized regularly, focusing on the importance of recycling, proper waste segregation, and environmental protection. Workshops, seminars, posters, and digital campaigns can further reinforce positive behavior.

- **Engage Religious and Cultural Groups in Sustainability Initiatives**

  Since religious beliefs significantly influence recycling behavior, faith-based student groups should be integrated into environmental programs. Religious

organizations can promote stewardship messages, which will help strengthen students' moral responsibility towards recycling.

- **Encourage Faculty-Based and Student-Led Environmental Clubs**

  Environmental clubs and faculty associations should be supported with grants, training, and recognition awards to encourage leadership in recycling. Student involvement in organizing green projects can deepen commitment and spread awareness.

- **Introduce Incentives to Motivate Participation**

  Although peer influence was low, incentives may still be effective when properly designed. The university can introduce reward systems such as recognition certificates, hall-based recycling competitions, eco-friendly souvenirs, or points-based programs for active recyclers..

- **Integrate Sustainability Into the Curriculum**

  Embedding environmental education in general studies and departmental courses will enhance knowledge and influence positive attitudes. Lectures, assignments, and practical projects on waste management can create long-term behavioral change.

- **Develop Partnerships With Environmental Agencies**

Collaboration with governmental and non-governmental organizations will provide technical support, funding, and expertise to improve campus recycling systems. External partnerships can also help in monitoring and sustaining recycling progress.

- **Establish a Campus Environmental Policy**

  The university should develop and enforce a formal sustainability policy that outlines waste management guidelines, recycling procedures, environmental responsibilities, and penalties for improper waste disposal

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APPENDIX

STUDENTS QUESTIONNAIRE

DEPARTMENT OF HEALTH SAFETY AND ENVIRONMENTAL EDUCATION

FACULTY OF EDUCATION

UNIVERSITY OF BENIN, EDO STATE

QUESTIONNAIRE ON FACTORS INFLUENCING RECYCLING BEHAVIOUR AMONG UNIVERSITY OF BENIN STUDENTS

Dear Respondent,

This questionnaire is designed to investigate the factors influencing recycling behavior among University of Benin students. Your participation in this study is voluntary and all responses will be treated with confidentiality and used solely for academic purposes.

Please answer all questions honestly. There are no right or wrong answers. Please indicate your opinion by ticking (✓) the option that best represents your response.

Thank you for your cooperation.

SECTION A: DEMOGRAPHIC INFORMATION

Instruction: Please tick (✓) where applicable.

- Age range: ☐ Below 18years ☐ 18-24years ☐ 25-30years ☐ 31 years and above
- Sex: ☐ Male ☐ Female
- Religious Affiliation:

  ☐ Christianity

  ☐ Islam

  ☐ Traditional Religion

  ☐ Other (please specify): _____

  ☐ No Religious Affiliation
- Student Category:

  ☐ Undergraduate

  ☐ Postgraduate

  ☐ Part-time Student
- Faculty: _____
- Level/Year of Study: _____

- Residential Status:

  ☐ On-Campus (Hostel)

  ☐ Off-Campus

B: FACTORS INFLUENCING RECYCLING BEHAVIOR

Instructions: Please indicate YES or NO to the following statements about factors that influence your recycling behavior.

S/N	ITEMS	YES	NO
8	My friends and peers do encourage me to recycle waste materials	☐	☐
9	I believe that university-led environmental or green projects encourage students to recycle more.	☐	☐
10	I believe availablity of recycling bins on campus is a factor influencing recycling behaviour	☐	☐
11	I believe waste segration facilities on campus is	☐	☐

	a factor influencing recycling behaviour		
12	I am aware of the economic benefits of recycling	☐	☐
13	I believe there are incentives or rewards for recycling on campus	☐	☐
14	My religious beliefs encourage environmental stewardship	☐	☐
15	Traditional waste management practices in my culture support recycling	☐	☐
16	I believe the University organizes awareness campaigns about recycling	☐	☐
17	I believe there are environmental clubs or organizations promoting recycling on campus	☐	☐

SECTION C: INFLUENCE OF AGE DIFFERENCE, SEX DIFFERENCE AND RELIGIOUS AFFILIATION ON FACTORS INFLUENCING RECYCLING BEHAVIOUR AMONG UNIVERSITY OF BENIN STUDENTS

Instructions: Please indicate your level of agreement with the following

statements using the scale below:

SD = Strongly Disagree | D = Disagree | A = Agree | SA = Strongly Agree

INFLUENCE OF AGE DIFFERENCES ON FACTORS INFLUENCING RECYCLING BEHAVIOR

S/N	ITEMS	SD	D	A	SA
18	I believe that students in my age group should have similar recycling habits	☐	☐	☐	☐
19	I believe that people of my age are more likely than other age groups to be motivated to recycle only if there is a clear financial reward or deposit-refund scheme	☐	☐	☐	☐
20	I believe that people in my age group should view recycling primarily as a moral obligation and cultural value	☐	☐	☐	☐
21	I believe that younger students should not be more influenced by social media campaigns about recycling	☐	☐	☐	☐
22	I believe that my age should not affect how much I consider the financial benefits before deciding to recycle.	☐	☐	☐	☐

INFLUENCE OF SEX DIFFERENCE ON FACTORS INFLUENCING RECYCLING BEHAVIOUR

S/N	ITEMS	SD	D	A	SA
23	I believe my sex makes me more sensitive to how my family and friends view my recycling habits	☐	☐	☐	☐
24	My personal sense of moral duty to protect the environment is the single most important reason I recycle, and I believe this feeling is strongly linked to my sex.	☐	☐	☐	☐
25	I believe that male students participate more in recycling activities than female students	☐	☐	☐	☐
26	I believe that males are more motivated than females to participate in recycling if the primary benefit is financial	☐	☐	☐	☐
27	I believe that females are more likely than males to strictly follow the detailed rules and sorting instructions provided by waste management authorities	☐	☐	☐	☐

INFLUENCE OF RELIGIOUS AFFILIATION ON FACTORS INFLUENCING RECYCLING BEHAVIOR

S/N	ITEMS	SD	D	A	SA
28	I am more likely to participate actively in a campus recycling program if the initiative is promoted or endorsed by my religious student group	☐	☐	☐	☐
29	I believe my religious upbringing creates a strong sense of moral duty to manage waste properly, making me less reliant on the University's official rules, fines, or disciplinary action to recycle.	☐	☐	☐	☐
30	I believe that my religious community encourages sustainable practices	☐	☐	☐	☐
31	My religious teachings (doctrine) about environmental stewardship or caring for creation are a stronger motivation for me to recycle than my general education about climate change.	☐	☐	☐	☐
32	I believe that religious teachings influence students' commitment to recycling	☐	☐	☐	☐

PERSONAL RECYCLING BEHAVIOR

S/N	ITEMS	SD	D	A	SA
33	I will actively look for recycling bins when I want to dispose of waste	☐	☐	☐	☐
34	I should regularly separate recyclable materials from general waste	☐	☐	☐	☐
35	I should encourage my friends to recycle	☐	☐	☐	☐
36	I should feel personally responsible for protecting the environment through recycling	☐	☐	☐	☐