

**AN ASSESSMENT OF AWARENESS AND ENGAGEMENT OF SUSTAINABLE
DEVELOPMENT GOALS (SDGs) IN KENYA UNIVERSITIES**

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MANAGEMENT AT STRATHMORE UNIVERSITY.**



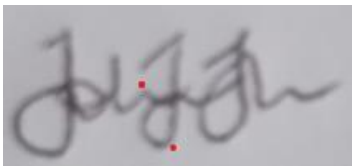
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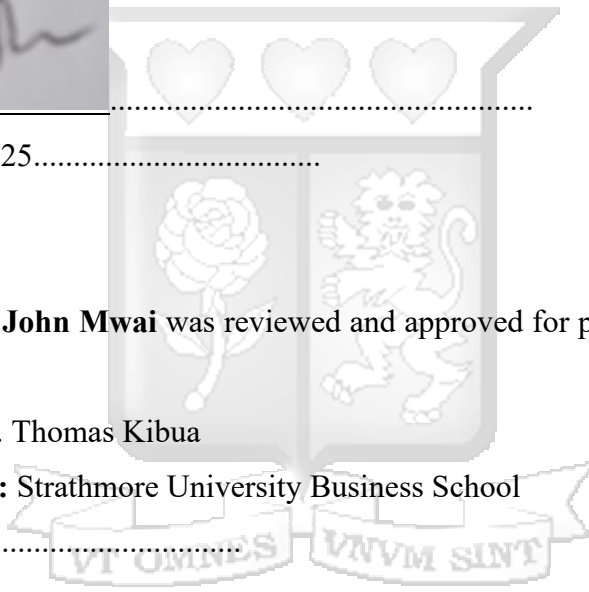
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ABSTRACT

Universities play a crucial role in advancing Sustainable Development Goals (SDGs) by fostering awareness, knowledge, and sustainable practices among future leaders. This study assessed Kenyan universities' contributions to SDG implementation by examining three key areas: the integration of SDG-related topics within curricula, accessibility to SDG information, and the adoption of sustainable practices. A descriptive correlational research design was used, employing a quantitative approach to analyze the relationships between these factors and SDG awareness and engagement. Stratified random sampling ensured representation from Kenya's 74 accredited universities, targeting 20 participants per institution: 10 students, 5 faculty members, and 5 administrative staff, resulting in a total sample of 1,480 respondents. Data were collected using structured questionnaires with a five-point ordinal scale. Findings revealed moderate levels of SDG awareness and engagement, with sustainable practices emerging as the most influential factor. Correlation analysis showed a strong positive relationship between SDG awareness and engagement and all three independent variables namely curriculum integration, information accessibility, and sustainable practices. Regression analysis confirmed that sustainable practices had the highest impact, followed by curriculum integration and information accessibility. However, specific gaps were identified, including limited depth in SDG curriculum content and fragmented information dissemination channels, which reduced students' and staff's ability to engage meaningfully with sustainability initiatives. The study concluded that while universities had made efforts to integrate SDGs into curricula, inconsistent implementation and accessibility challenges hindered full engagement. Strengthening institutional commitment, enhancing digital platforms for SDG resources, and fostering sustainability-driven campus initiatives were recommended. Increased collaboration between universities, policymakers, and stakeholders was recommended as a key strategy to bridge the gap between knowledge and practice.

Key words: *SDG integration, sustainability education, information accessibility, sustainable SDG practices, Kenyan universities*

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LIST OF ACRONYMS AND ABBREVIATIONS

CUE	Commission for University Education
NACOSTI	National Council for Science, Technology, and Innovation
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences



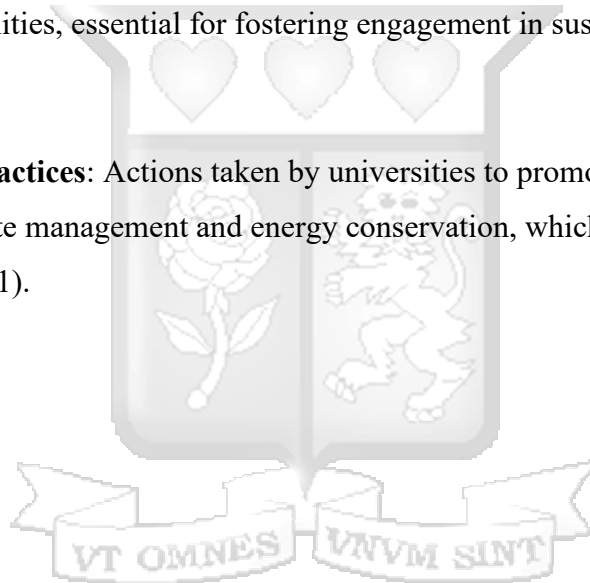
DEFINITION OF TERMS

Sustainable Development Goals (SDGs): A set of 17 global goals established by the United Nations in 2015 to address issues such as poverty, inequality, and environmental sustainability by 2030 (United Nations, 2015).

Curriculum Integration: The inclusion of SDG-related topics within academic courses across disciplines, enabling students to gain an interdisciplinary understanding of sustainability issues (Leal Filho et al., 2021).

Information Accessibility: The availability and ease of access to SDG resources on digital platforms or campus facilities, essential for fostering engagement in sustainability initiatives (Nhamo et al., 2020).

Sustainable Campus Practices: Actions taken by universities to promote environmental stewardship, such as waste management and energy conservation, which align with SDG goals (Mwangi & Mutheu, 2021).



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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Sustainable Development Goals (SDGs), established in 2015 by the United Nations, serve as a global framework to address pressing socio-economic and environmental challenges, aiming to eradicate poverty, protect the planet, and ensure global prosperity by 2030 (United Nations, 2015). The SDGs, comprising 17 goals, 169 targets, and 247 indicators, require widespread commitment from various sectors to be fully realized. Universities, as centers for education and research, are pivotal in this regard, offering evidence-based research, disseminating knowledge, and fostering a culture of sustainability among students and staff (UNESCO, 2017). As institutions dedicated to societal advancement, universities have the potential to directly impact SDG implementation by conducting research that informs policy and educating future leaders who will drive sustainable development initiatives (Leal Filho et al., 2018). This study focuses on the role of Kenyan universities in contributing to the SDGs, examining factors such as curriculum integration, institutional policies, and research initiatives to assess their impact on national and global sustainability efforts.

Globally, higher education institutions have increasingly recognized the urgency of addressing sustainability challenges, with many committing to SDG-related initiatives through curricula, research, and community engagement. For instance, universities across Europe and North America have systematically integrated SDG themes across multiple disciplines, emphasizing the importance of interdisciplinary approaches to sustainability (Leal Filho et al., 2019). These institutions frequently undertake sustainability assessments, develop campus initiatives, and foster global partnerships to expand their impact beyond academia (Lozano et al., 2013). Research highlights that universities contribute significantly to shaping sustainable behaviors, attitudes, and knowledge within their communities, creating a ripple effect that extends into society (Wals et al., 2014). However, while these institutions make substantial contributions, disparities persist in their capacity to implement SDG-aligned initiatives due to varying financial, political, and cultural challenges (UNESCO, 2020).

Additionally, the Education for Sustainable Development (ESD) framework underscores that universities play a transformative role in sustainability, not only by educating students but also by advancing research to inform sustainable practices (UNESCO, 2017). The Global Universities Partnership on Environment and Sustainability (GUPES), established by the United Nations Environment Programme (UNEP), aims to foster SDG alignment in higher education by encouraging universities to adopt sustainability practices and engage in global knowledge-sharing initiatives (United Nations Environment Programme, 2018). Despite these efforts, research suggests that only a fraction of universities globally have fully integrated SDG principles due to limited institutional commitment and supportive policies, particularly in developing countries (Leal Filho et al., 2019). Therefore, while global universities are making strides in SDG implementation, there remains a need for consistent institutional support and alignment with national and international sustainability policies to achieve comprehensive outcomes.

In Africa, the integration of SDGs into higher education is essential to address the continent's unique socio-economic challenges, such as poverty, inequality, and environmental degradation. The African Union's Agenda 2063 aligns closely with the SDGs and emphasizes education as a pathway to sustainable development, recognizing that universities are instrumental in shaping the skills and values necessary for achieving these goals (African Union, 2015). However, African universities often encounter significant barriers, including limited funding, inadequate infrastructure, and insufficient support for SDG research and initiatives (Akeredolu-Ale & Akande, 2020). Studies have shown that while African universities are eager to engage with the SDGs, these constraints hinder their ability to contribute effectively, particularly when compared to institutions in more resource-rich regions (Leal Filho et al., 2018). Despite these challenges, universities in Africa have made notable progress, with many institutions embedding sustainability education within their curricula and collaborating with governments to address pressing development issues (The Sustainable Development Goals Center for Africa, 2021).

Moreover, African universities contribute to sustainable development by generating local, evidence-based research that informs policy and addresses critical issues relevant to the SDGs.

For example, universities in Nigeria, Kenya, and South Africa have established research centers focused on sustainable agriculture, renewable energy, and public health, which directly support national and continental SDG agendas (Leal Filho et al., 2020). The knowledge generated within these institutions often influences policy and promotes sustainable practices within local communities, bridging the gap between academic research and real-world application (Wright et al., 2013). However, for African universities to maximize their contributions to the SDGs, there is a need for increased support from both national governments and international partners to ensure sustained resources and infrastructural improvements that facilitate SDG-aligned research and initiatives (UNESCO, 2020).

Kenya has been proactive in aligning its national policies with the SDG framework, particularly through its Vision 2030 development blueprint, which prioritizes sustainable economic growth and environmental stewardship. The Kenyan government has established frameworks to support SDG implementation, incorporating sustainability targets into its national development agenda and engaging various stakeholders, including universities, to facilitate research and innovation in sustainability (Ministry of Education Kenya, 2019). Kenyan universities have responded to this call by incorporating SDG principles into their academic curricula, fostering a culture of sustainability through campus initiatives, and conducting research that informs both local and national sustainable development policies (The National Treasury and Planning, 2019). This approach has helped integrate sustainable development into the education sector, positioning Kenyan universities as key players in the country's commitment to achieving the SDGs.

However, despite these efforts, Kenyan universities continue to face challenges in SDG implementation due to constraints in funding, limited access to resources, and disparities in institutional capacities. While some universities, particularly those in urban centers, have made significant strides in integrating SDG-related courses and practices, others, especially in rural areas, struggle to keep up due to infrastructural and financial limitations (SDSN Kenya, 2021). Furthermore, the inconsistent adoption of SDG principles across Kenyan universities highlights the need for a more cohesive and standardized framework that supports SDG-related activities within higher education. Such a framework could enhance the role of Kenyan universities in

supporting sustainable development, ensuring that students and staff are better equipped to address the socio-economic and environmental challenges aligned with Kenya's Vision 2030.

In summary, while universities globally, regionally, and within Kenya contribute significantly to the SDG agenda, the extent of their contributions varies widely due to differences in resources, institutional commitment, and policy support. Kenyan universities have the potential to drive sustainable development through research, education, and community engagement; however, realizing this potential requires a supportive policy environment and enhanced resources. This study aimed to assess the contributions of Kenyan universities to the SDGs by examining the integration of sustainability principles within academic curricula, campus practices, and research initiatives. By identifying the strengths and areas for improvement in SDG awareness, engagement and implementation across Kenyan universities, this research sought to inform policies that reinforced the role of higher education in achieving sustainable development goals and aligning with Kenya's national and international commitments. (Leal Filho et al., 2018; Ministry of Education Kenya, 2019; SDSN Kenya, 2021; United Nations, 2015; UNESCO, 2020).

1.1.1 Integrating SDG Topics and Practices in Kenyan University Curricula

The integration of Sustainable Development Goals (SDG)-related topics within university curricula has garnered attention globally, as institutions aim to shape a generation that is knowledgeable about and dedicated to sustainable practices. Researchers have found that embedding sustainability concepts across diverse academic disciplines is essential for fostering interdisciplinary understanding and equipping students with the skills needed to address complex global challenges (Lozano et al., 2017). Studies emphasize that effective SDG integration requires revising traditional curricula to include modules on sustainability, environmental protection, and social equity, thus moving beyond single-discipline teaching approaches (Leal Filho et al., 2018). Despite these efforts, there is an uneven implementation of SDG principles across institutions, as universities in developing regions, including Africa, face challenges related to resources and support for curricular reforms (Odeh et al., 2020; Sterling, 2019).

Furthermore, the role of higher education in advancing SDGs is evident in universities that have restructured curricula to reflect sustainable development ideals. For example, European and North American universities have led in creating comprehensive sustainability-focused degree programs that align directly with specific SDGs (Lozano et al., 2015; Tilbury, 2020). Research in these regions indicates that structured curricula embedding sustainability fosters student engagement and encourages sustainability initiatives beyond academia (Tilbury & Wortman, 2020). While curricula integration is well-established in Western institutions, studies highlight that African universities face specific challenges, including limited funding and lack of government support, which restrict the full integration of SDG-related topics (Wals et al., 2014). These findings underscore the need for policies that incentivize SDG curriculum integration, particularly in resource-limited contexts like Kenya.

In Africa, research has explored the barriers and opportunities associated with embedding SDG topics in university education. African universities generally acknowledge the importance of SDG-focused education; however, there is often a disparity between recognition and actual implementation due to limited institutional capacity and competing educational priorities (Odeh & Fedoruk, 2021). Studies indicate that although some Kenyan universities have introduced SDG-related programs, these are often isolated courses rather than integrated curricula, highlighting a lack of cohesion in sustainability education across disciplines (Leal Filho et al., 2019). For instance, research by Lwanga and Adams (2021) found that while universities in Kenya offer individual sustainability courses, a systemic approach to incorporating SDG education within core curricula remains limited, impacting students' comprehensive understanding of sustainable development.

The need for a collaborative approach among stakeholders to facilitate SDG integration in higher education is evident, especially within the Kenyan context. Studies advocate partnerships between universities, government agencies, and the private sector to overcome existing barriers and strengthen curriculum alignment with the SDGs (Sterling, 2019; Sachs et al., 2021). These partnerships can provide financial and technical resources necessary for developing comprehensive SDG-aligned curricula. Research by Kamau and Wambua (2020) in Kenya underscores the positive impact of such collaborations, as external support from non-

governmental organizations has facilitated the development of sustainability-oriented modules in some Kenyan institutions. However, the challenge remains widespread integration across the university sector, necessitating a strategic policy framework that prioritizes and supports SDG curriculum development within Kenyan higher education.

1.1.2 Information Accessibility and Its Impact on SDG Engagement

Accessibility to information plays a crucial role in promoting awareness and engagement with the Sustainable Development Goals (SDGs) within university communities. Research underscores that universities with easy access to SDG-related resources such as databases, libraries, and online platforms, witness higher levels of engagement in sustainability initiatives (Biberhofer et al., 2019). For example, studies by Tilbury and Ryan (2018) emphasize that information accessibility, combined with faculty and staff training, is essential for effectively integrating SDG knowledge within universities. The absence of accessible resources, particularly in resource-constrained regions like Kenya, poses a significant barrier to achieving widespread awareness and engagement with the SDGs, as indicated in studies of African universities (Adeoye & Ilori, 2021).

Information accessibility is not only limited to physical resources but also extends to digital platforms and institutional policies that promote sustainable development awareness. Research by Lozano et al. (2017) found that universities implementing SDG-focused digital libraries and research databases significantly improved SDG engagement within their student and faculty communities. In contrast, universities lacking such digital infrastructure struggle to foster engagement, highlighting a digital divide in SDG accessibility within the higher education sector (Siddiqui et al., 2021). African institutions often encounter challenges in maintaining up-to-date SDG information due to funding limitations and lack of institutional support for digital advancements (Nhamo et al., 2020). This highlights the importance of digital transformation within universities, particularly in developing countries, to bridge gaps in SDG awareness.

Moreover, studies reveal a correlation between information accessibility and students' attitudes toward sustainability. Accessible SDG-related information fosters an environment where students can actively participate in discussions and initiatives on sustainable practices (Wals & Corcoran, 2016). Research by Kamal et al. (2020) in Kenyan universities shows that students

with access to SDG resources are more likely to participate in community sustainability projects, reflecting the positive impact of information accessibility on SDG engagement. Conversely, a lack of accessible resources leads to lower participation rates in sustainability initiatives, underscoring the necessity of institutional commitment to resource provision (Acheampong et al., 2019; Tilbury & Wortman, 2020).

Addressing accessibility challenges requires institutional support and collaboration among stakeholders. Studies suggest that partnerships with international organizations and technology providers can significantly enhance SDG information accessibility in African universities (Biberhofer & Rieckmann, 2018). For instance, collaborations with technology firms can facilitate digital access to SDG content, thereby enhancing student and faculty engagement in sustainability. In Kenya, institutions such as the University of Nairobi have begun leveraging partnerships with local NGOs to establish SDG resource centers, demonstrating the potential of collaborative efforts in improving information accessibility for sustainable development (Sachs et al., 2021). However, scaling such initiatives across all Kenyan universities requires cohesive national policies and sustained financial support.

1.1.3 Sustainable Practices in Kenyan Universities for SDG Implementation

Sustainable practices within universities contribute significantly to the implementation of the SDGs by modeling environmentally and socially responsible behaviors. Studies have documented various approaches to sustainable campus operations, from waste management to energy conservation, which serve as practical demonstrations of SDG principles (Leal Filho et al., 2019). For instance, European universities have pioneered green campus initiatives, such as solar energy installations and zero-waste policies, creating a culture of sustainability that extends into the broader community (Lozano et al., 2017). African universities, though increasingly adopting similar practices, face unique challenges related to resource constraints and institutional support, which impact their ability to fully implement such sustainable practices (Sterling, 2019; Wals et al., 2014).

In Kenya, universities have increasingly recognized the importance of sustainable practices in aligning with the national and global SDG agenda. Research by Mwangi and Nyangena (2020) highlights that institutions such as Kenyatta University have introduced campus-based

initiatives like tree planting and waste recycling programs that contribute to environmental conservation and promote SDG awareness among students. These efforts align with Kenya's Vision 2030 goals and illustrate how universities serve as models for sustainability within their communities. However, while these initiatives are impactful, their scale and sustainability remain limited due to budgetary constraints and limited policy support (Odeh et al., 2020).

Furthermore, the implementation of sustainable practices within universities extends beyond environmental initiatives to encompass social sustainability. Studies have shown that socially inclusive practices, such as community engagement and partnerships, foster a sense of responsibility towards achieving the SDGs among university stakeholders (Siddiqui et al., 2021; Wright & Wilton, 2013). In the context of Kenya, universities have partnered with local organizations to create educational programs on sustainability, providing communities with the tools to implement SDG-aligned practices (Leal Filho et al., 2020). These programs not only enhance SDG awareness but also empower communities to take actionable steps towards sustainable development, underscoring the role of universities in driving social sustainability.

The adoption of sustainable practices in Kenyan universities requires a collaborative approach involving policymakers, educational leaders, and community stakeholders. Research by Sachs et al. (2021) emphasizes the importance of policy frameworks that encourage sustainable practices within universities, ensuring alignment with national development goals. In Kenya, universities continue to advocate for policies that support the integration of sustainable practices in campus operations, aiming to create a unified approach to SDG implementation across the higher education sector. Moving forward, strengthened partnerships with government bodies and non-governmental organizations could enhance resource availability and facilitate the expansion of sustainable initiatives, enabling Kenyan universities to effectively contribute to the SDGs.

1.2 The Problem Statement

Universities hold a critical mandate in advancing sustainable development through research, education, and innovation. Globally, they are viewed as knowledge institutions capable of nurturing future leaders who can drive meaningful progress toward the Sustainable

Development Goals (SDGs). In Kenya, however, there is growing concern that universities may not be fully leveraging their potential to contribute to the SDG agenda in tangible, institutionalized ways. While existing research suggests that university graduates demonstrate relatively high SDG awareness, estimated at 54.4% compared to just 19.7% among those with primary education (The National Treasury and Planning, 2019), this awareness has not consistently translated into deeper engagement with SDG implementation within higher education institutions. According to UNESCO (2020), the success of SDG initiatives in academic settings requires more than just knowledge; it demands structured institutional frameworks, curriculum alignment, and strategic planning components that are often absent or underdeveloped.

Prior studies focusing on SDG awareness among university communities have primarily highlighted knowledge levels without evaluating how institutions act on that knowledge. For instance, Omisore et al. (2017) found that only 43% of staff at Osun State University in Nigeria were aware of the SDGs, yet their understanding lacked depth and practical application. Similarly, a study by Afroz and Ilham (2020) at the University of Malaya revealed that although awareness of the SDGs was relatively high among faculty, only a small percentage could correctly identify the number of goals or describe their relevance to specific disciplines. Nur et al. (2021), in their study of Universiti Teknologi MARA, further established that students were largely passive recipients of SDG information, with few opportunities for active engagement. These studies, though insightful, remain largely limited to measuring surface-level awareness. They fall short in examining institutional commitment such as the extent of SDG integration in curricula, the presence of sustainability initiatives on campus, or access to structured SDG resources.

This study therefore sought to respond to these limitations by going beyond individual awareness levels to assess how Kenyan universities are engaging with the SDG framework at the institutional level. It focused on three core areas: the extent to which SDG-related topics and principles have been integrated into university curricula; the accessibility of SDG-related information within campus communities; and the sustainability practices implemented by universities in alignment with SDG targets. Leal Filho et al. (2019) emphasized that institutional

frameworks, such as green campus initiatives and curriculum reorientation, are essential for embedding sustainability into higher education. Likewise, Biberhofer and Rieckmann (2018) noted that universities that integrate sustainability in pedagogy and campus operations contribute more effectively to national and global development goals. Considering this, the study approached the SDGs not merely as a matter of awareness but as a question of institutional readiness, engagement, and alignment with Kenya's development priorities.

Ultimately, this research aimed to generate actionable insights that would support policy and institutional reforms within Kenya's higher education sector. By evaluating SDG integration through curriculum development, accessibility of information, and practical sustainability initiatives, the study sought to inform national strategies such as Vision 2030 and the Kenya Green Economy Strategy and Implementation Plan (Ministry of Education Kenya, 2019; SDSN Kenya, 2021). In doing so, it offered a deeper understanding of the systemic and structural changes needed for universities to move from passive awareness to active contribution. Bridging this gap was seen as vital not only for Kenya's national development but also for preparing a new generation of graduates equipped to address global sustainability challenges.

1.3 Research Objectives

1.3.1 General Objective

The general objective of the study was to assess how the integration of SDG-related content in curricula, accessibility of SDG information, and adoption of sustainable practices influenced SDG awareness and engagement in Kenyan universities.

1.3.2 Specific Objectives

The specific objectives of the study were to:

- i. Evaluate the extent of integration of SDG-related topics and practices within curricula across Kenyan universities.
- ii. Examine the effect of information accessibility on SDG awareness and engagement within university communities in Kenya.
- iii. Assess the extent to which sustainable practices implemented within Kenyan universities contribute to SDG awareness and engagement.

1.4 Research Questions

- a. To what extent have SDG-related topics and practices been integrated into the curricula of Kenyan universities?
- b. How does the accessibility of information affect SDG awareness and engagement within university communities in Kenya?
- c. To what extent do sustainable practices implemented within Kenyan universities contribute to SDG awareness and engagement among students, faculty, and administrative staff?

1.5 Scope of the Study

The study focused on assessing how Kenyan universities engaged with the Sustainable Development Goals (SDGs) by evaluating three key institutional factors: the integration of SDG-related content into academic curricula, accessibility of SDG information within university communities, and the adoption of sustainable campus practices. Rather than attempting to assess all 17 SDGs, the study concentrated on elements most relevant to the university setting, particularly those aligned with SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), and SDG 12 (Responsible Consumption and Production). These goals reflected the operational and educational functions of universities and allowed the research to investigate how institutions translated SDG awareness into tangible practices that could foster deeper engagement among students, faculty, and administrative staff.

The study was conducted among a representative sample of public and private universities across Kenya, targeting students, faculty members, and administrators as the primary stakeholders. It was geographically limited to Kenyan institutions and did not include other levels of education, such as primary or secondary schools. Data was collected through structured questionnaires and analyzed using quantitative methods, with the entire data collection and analysis process concluding in 2025. While the primary context was Kenyan universities, the findings offered broader implications for other African higher education systems facing similar challenges related to sustainability, policy implementation, and institutional capacity. By defining its boundaries in this way, the study ensured a focused and actionable contribution to the discourse on higher education and sustainable development.

1.6 Significance of the Study

This study was significant to multiple stakeholders, including academic researchers, university administrators and policymakers. By evaluating how Kenyan universities engaged with the Sustainable Development Goals (SDGs) through curriculum integration, information accessibility, and sustainable campus practices, the study provided timely and evidence-based insights into the role of higher education in advancing national and global development priorities. The research also highlighted institutional gaps and opportunities for enhancing SDG awareness and engagement, offering a foundation for both theoretical advancement and practical reform.

Academic Contribution: The study contributed to the growing body of sustainability education literature by providing empirical evidence on how SDG awareness and engagement were influenced by institutional mechanisms in Kenyan universities. It expanded academic understanding of the interplay between curriculum content, access to sustainability information, and operational practices in promoting SDG literacy. Researchers and scholars in the fields of education, sustainability, and development studies could use these findings to further refine theories related to educational change, institutional behaviour, and knowledge dissemination. The study also provided a context-specific contribution to African scholarship, which is often underrepresented in global SDG discourse (Ul-Haq et al., 2012; Leal Filho et al., 2019).

Institutional Impact: For university administrators and academic planners, the study offered actionable insights into the effectiveness of existing SDG-related initiatives. It enabled institutions to reflect on the extent to which their curricula incorporated sustainability principles, whether students and staff had adequate access to SDG resources, and how well campus practices modelled responsible environmental and social behaviour. The findings supported universities in developing more cohesive strategies for institutionalizing sustainability education, allocating resources effectively, and building a culture of environmental stewardship and social responsibility across departments and faculties (Sachs et al., 2021; Wals & Corcoran, 2016).

Policy Implications: The study provided valuable data for policymakers and regulatory bodies such as the Ministry of Education, the Commission for University Education (CUE), and other government agencies involved in educational reform and sustainable development. It underscored the need for policy frameworks that go beyond general SDG promotion and focus on measurable, institution-level engagement strategies. The findings could inform national policy initiatives such as Kenya's Vision 2030 and the Green Economy Strategy and Implementation Plan, particularly by guiding the integration of sustainability standards within higher education accreditation and funding criteria. Moreover, the insights from this study could support the development of targeted capacity-building programs and collaborative platforms to promote knowledge sharing and institutional alignment with the 2030 Agenda (Ministry of Education Kenya, 2019; Nhamo et al., 2020).

1.7 Chapter Summary

This chapter introduced the purpose of the study, which was to assess Sustainable Development Goal (SDG) awareness and engagement in Kenyan universities by examining three institutional factors: curriculum integration, accessibility of SDG-related information, and the implementation of sustainable campus practices. It provided a contextual background on the SDGs, emphasizing the critical role of higher education in advancing sustainable development through knowledge dissemination, institutional policy, and student engagement. The chapter outlined the research objectives and questions, clarified the narrowed scope, and highlighted the study's significance for academia, institutional reform, policy development, and the broader sustainability agenda in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter was to review relevant literature that supported the study's focus on the role of universities in SDG implementation. This review included an analysis of key theories underpinning the study's variables, as well as a critical review of empirical research on the contribution of universities to SDG awareness, engagement, and implementation. The chapter was structured to present a theoretical review that provided a rationale for a multi-theoretical approach, followed by an empirical literature review. By synthesizing findings from prior research, this chapter identified gaps in the literature related to SDG practices in Kenyan universities and concluded with a conceptual framework for the study.

2.2 Theoretical Review

A robust theoretical foundation was essential to guide the research, provide clarity on key concepts, and establish connections between study variables. This study employed a multi-theoretical framework that included the Dynamic Capabilities Theory, the Knowledge-Based Theory of the Firm, and the Knowledge Gap Theory. These theories collectively supported the study's focus on evaluating SDG integration within universities, examining information accessibility, and addressing knowledge disparities.

2.2.1. Dynamic Capabilities Theory

The Dynamic Capabilities Theory, introduced by Teece et al. (1997), stated that organizations must develop capabilities that allowed them to adapt and reconfigure resources in response to changing environments. This theory emphasized three core components: sensing, seizing, and reconfiguring, which organizations had to master to maintain competitiveness and innovation (Teece, 2007). Dynamic capabilities were essential in contexts where knowledge and resources had to be constantly aligned with external shifts, making this theory particularly relevant to the SDGs, where rapid adaptation to emerging sustainability needs was crucial (Prabhakar & Savinkina, 2018).

Applying this theory to Kenyan universities, the study suggested that higher education institutions needed dynamic capabilities to integrate SDGs into curricula and campus practices. For example, the sensing component involved identifying opportunities to embed SDG topics into academic programs, seizing related to the implementation of SDG-aligned curricula, and reconfiguring represented the ability of universities to continually adapt their structures to enhance SDG awareness (Frias-Navarro & Montoya-Restrepo, 2020). This adaptive approach enabled universities to foster sustainability education, respond to new SDG challenges, and ultimately support Kenya's Vision 2030 (Farnese et al., 2019).

While the Dynamic Capabilities Theory offered a robust framework for understanding institutional adaptation, it often assumed that organizations operated in relatively flexible environments with adequate leadership and resources. In the context of many Kenyan universities, structural rigidity, limited financial autonomy, and centralized decision-making processes may have constrained their ability to quickly reconfigure systems or implement innovative SDG-aligned practices (Nganga & Onyango, 2019). Additionally, the theory placed heavy emphasis on internal processes while underestimating the influence of external barriers, such as government policy restrictions or infrastructural deficits, which could significantly impact a university's capacity to respond to sustainability imperatives (Eisenhardt & Martin, 2000; Barreto, 2010). As such, while theoretically sound, the practical application of dynamic capabilities in public university settings required a more nuanced appreciation of contextual constraints and institutional inertia.

2.2.2. Knowledge-Based Theory of the Firm

The Knowledge-Based Theory (KBT) of the Firm, developed by Grant (1996), asserted that knowledge was a primary resource, with both tangible and intangible elements that drove organizational value. The theory held that organizations had to effectively manage knowledge to create value and sustain competitive advantage (Choi & Lee, 2003; Huang & Li, 2009). Within this framework, information accessibility was central to knowledge creation and transfer, as it enabled organizations to utilize knowledge effectively for problem-solving and innovation (Grant, 2002).

In the context of this study, KBT highlighted the importance of information accessibility for SDG engagement within universities. Universities with well-established knowledge-sharing mechanisms, such as digital databases and research resources, were better equipped to foster awareness and engagement with SDGs. By managing and disseminating SDG-related knowledge, universities enhanced students' and faculty's understanding of sustainable development issues and promoted practices that aligned with global sustainability goals (Cerchione & Esposito, 2017). Thus, the theory underscored the need for accessible SDG information within Kenyan universities to support the integration of SDG practices in education and community engagement.

Although the Knowledge-Based Theory emphasized the importance of knowledge as a strategic asset, it often idealized knowledge flow within organizations, assuming that once infrastructure was in place, knowledge would be effectively accessed and applied. Universities particularly in developing contexts, faced numerous internal challenges such as fragmented knowledge systems, inconsistent digital infrastructure, and limited staff training, which hindered effective knowledge transfer (Kiamba, 2014; Nonaka & Toyama, 2003). Furthermore, KBT tended to overlook motivational, cultural, and political dynamics that influenced knowledge-sharing behavior among university staff and students (Hislop, 2013). In Kenyan universities, for example, power dynamics and departmental silos often acted as barriers to collaborative knowledge exchange. These limitations indicated that while KBT provided a useful theoretical base, it required adaptation when applied to higher education environments where informal structures and resource limitations played significant roles.

2.2.3 Knowledge Gap Theory

The Knowledge Gap Theory, proposed by Tichenor, Donohue, and Olien (1970), suggested that variations in socioeconomic status and access to information created disparities in knowledge acquisition among individuals. This theory was relevant to studies on SDG awareness within universities, as differences in access to information could lead to unequal levels of SDG understanding and engagement among faculty, students, and staff (Gaziano, 2010). The theory indicated that individuals with greater access to information channels were likely to gain more

SDG knowledge than those with limited access, leading to potential disparities in sustainability education outcomes.

In applying this theory to Kenyan universities, the study examined how gaps in SDG awareness and engagement arose from uneven access to SDG resources. Understanding these knowledge gaps was essential for developing strategies that promoted equitable access to SDG information, thereby reducing disparities in sustainability education within university communities. The Knowledge Gap Theory, introduced by Tichenor, Donohue, and Olien (1970), suggested that individuals with more access to information tended to acquire knowledge more quickly, which led to unequal levels of understanding. In the context of SDG awareness, Omisore et al. (2017) found that university staff in Nigeria demonstrated varied levels of SDG knowledge depending on their access to informational resources. This theory provided a framework for analysing the effectiveness of information dissemination on SDG topics across Kenyan universities, contributing to the study's objective of evaluating information accessibility and addressing the resulting disparities in SDG awareness.

Although the Knowledge Gap Theory provided a valuable foundation for understanding disparities in knowledge distribution, it had been criticized for being overly deterministic and failing to account for the complex social and psychological factors that mediated learning outcomes (Viswanath & Finnegan, 1996). In university environments, especially within diverse and resource-constrained contexts like Kenya, disparities in SDG awareness could not be attributed solely to access to information. Motivation, prior knowledge, institutional support, and even language of instruction all played critical roles in shaping how SDG knowledge was absorbed and acted upon (Kawachi, 2000; Rogers, 2003). Furthermore, the theory tended to present information consumers as passive recipients, overlooking the active role that students and staff could play in seeking out, interpreting, and disseminating sustainability-related knowledge. As such, while useful, the theory required contextual adaptation to accurately reflect the realities of SDG engagement in Kenyan higher education institutions.

2.3 Empirical Review

This section presented empirical studies related to each of the three specific objectives of this study, focusing on the integration of SDG-related topics within curricula, information accessibility for SDG engagement, and sustainable practices in universities that supported SDG implementation.

2.3.1 Integration of SDG-Related Topics and Practices within University Curricula

Integrating SDG-related topics into university curricula was increasingly recognized as a critical approach to fostering sustainable development in higher education, with universities playing a transformative role in educating students on sustainability challenges. Leal Filho et al. (2021) conducted a comprehensive study on SDG curriculum integration across European universities, utilizing a survey-based method to assess the extent to which SDG topics were embedded within coursework. Their findings indicated that institutions incorporating SDG themes across multiple disciplines produced graduates more adept at addressing real-world sustainability issues. This study, which measured integration through faculty surveys and curriculum audits, highlighted that universities with cross-disciplinary SDG topics fostered a culture of sustainability that resonated throughout the academic community. Similarly, Lozano et al. (2022) analysed curricular transformations in U.S. and European institutions and found that structured SDG-aligned curricula enhanced student engagement in sustainability initiatives. Using curriculum audits, Lozano et al. identified specific SDG modules, concluding that comprehensive integration of these topics fosters a more engaged and environmentally conscious student body.

Barth and Rieckmann (2020) extended this analysis by exploring interdisciplinary approaches to SDG education, revealing that interdisciplinary curriculum models improved students' critical thinking and collaborative problem-solving skills. In their study, which surveyed faculty across various disciplines, universities that adopted a cross-disciplinary approach reported higher student engagement and a more profound understanding of sustainability. However, the study noted that these benefits often required significant investment in faculty training and institutional commitment, as many educators were not initially well-versed in SDG concepts. A similar finding emerged in Tilbury and Ryan's (2020) research, which examined the role of leadership and professional development in effective SDG integration. They argued that SDG curriculum integration becomes more impactful when supported by strategic leadership and

development programs for educators, as faculty training directly influences the depth and quality of SDG content in academic programs.

In contrast to the progress seen in Western universities, African institutions faced specific challenges in embedding SDG-related topics due to limited resources, diverse funding priorities, and a lack of standardized sustainability curricula. Mwangi and Mutua (2021) conducted a mixed-methods study on SDG integration in Kenyan universities, uncovering significant disparities in curriculum implementation between public and private institutions. While some Kenyan universities had introduced isolated sustainability courses, Mwangi and Mutua observed that integration across departments remained limited. The study, which utilized course audits and faculty interviews, found that funding constraints were a primary barrier to comprehensive SDG curriculum integration. Moreover, disparities in SDG education access were linked to differences in institutional types and locations, with urban universities generally having better resources and capacities for sustainability education than their rural counterparts.

Cheong et al. (2021) examined SDG integration in Asian universities, finding that countries with national sustainability policies showed greater progress in embedding SDGs within academic programs. Their research employed a combination of content analysis and faculty interviews, revealing that institutions with government-backed guidelines for sustainability education were more successful in developing extensive SDG-aligned curricula. For instance, countries like South Korea and Japan, where national education policies emphasized sustainable development, had higher integration rates compared to countries without such policies. The findings from Cheong et al. highlighted the importance of policy support in facilitating curriculum transformation, aligning with findings from studies in Western universities where government and institutional backing are critical to SDG integration efforts (Leal Filho et al., 2021; Lozano et al., 2022).

Synthesizing these studies revealed that effective SDG curriculum integration was influenced by multiple factors, including institutional commitment, faculty training, resource availability, and supportive policy frameworks. Western universities generally showed higher levels of SDG integration due to substantial funding and policy support, while universities in Africa and Asia

faced resource limitations and lacked consistent support for sustainability education. This study aimed to bridge these gaps by examining curriculum integration practices within Kenyan universities and identifying specific barriers and strategies to enhance SDG-related education in a resource-constrained setting, offering insights into how Kenyan institutions could optimize curriculum transformation to contribute to sustainable development (Barth & Rieckmann, 2020; Mwangi & Mutua, 2021; Cheong et al., 2021).

2.3.2 Information Accessibility and Its Effect on SDG Awareness and Engagement

Information accessibility was a key determinant of SDG awareness and engagement within universities, as it enabled students, faculty, and staff to access the knowledge resources needed for sustainability learning and advocacy. Biberhofer et al. (2020) examined the role of digital resources in fostering SDG engagement within European universities, finding that institutions with comprehensive online resources, such as digital libraries and SDG portals, had significantly higher levels of student involvement in sustainability initiatives. Their study, based on a survey of university students, found that students with unrestricted access to SDG-related information were more likely to engage in campus-based sustainability activities. The research further suggested that digital accessibility directly supports independent learning, as students could readily explore SDG concepts and resources outside of formal curricula.

Nhamo et al. (2020) conducted a similar study on information accessibility in African universities, identifying disparities between institutions with advanced digital resources and those with limited access to technology. Using a cross-sectional study design, they found that the lack of online SDG resources, especially in rural universities, constrained students' opportunities to engage in SDG-related activities. This study measured information accessibility through faculty and student surveys, revealing a strong positive correlation between the availability of digital resources and SDG engagement. The authors concluded that African universities, particularly those in rural areas, need targeted infrastructural support to ensure equitable access to digital SDG resources, as the current resource limitations hinder the ability of these institutions to foster sustainability engagement.

Cheong et al. (2021) explored the impact of open-access resources on student engagement with SDGs in Asian universities, utilizing a mixed-methods approach that combined content analysis

of digital resource platforms and surveys assessing students' SDG engagement levels. Their findings indicated that universities with accessible SDG content experienced a 20% increase in student participation in sustainability initiatives compared to those with restricted access to resources. This study reinforced Biberhofer et al. (2020) by demonstrating that digital accessibility enables students to independently explore sustainability topics, creating a more informed and engaged academic community. Moreover, the study highlighted a notable disparity between high- and low-income countries in terms of SDG resource availability, underscoring the need for policies that facilitate equal access to SDG information across regions.

Adeoye et al. (2021) examined information accessibility within Nigerian universities, focusing on how digital resources influenced SDG awareness. Their survey-based study assessed accessibility through questions on digital library resources, online databases, and SDG-specific content availability. They found that institutions with robust digital libraries and SDG portals experienced higher levels of SDG awareness and knowledge among students, highlighting the essential role of digital resources in fostering sustainability literacy. Their findings align with those of Nhamo et al. (2020) and Cheong et al. (2021), suggesting that improved access to digital information is crucial for advancing SDG engagement within African institutions, particularly where physical resources may be scarce.

Collectively, these studies underscored a consistent positive relationship between information accessibility and SDG engagement, with evidence showing that enhanced digital infrastructure supported awareness and participation in sustainability initiatives. While European and Asian universities typically offered more accessible SDG resources, African institutions faced substantial challenges in this regard due to limited funding and infrastructure. This study sought to investigate the current state of information accessibility within Kenyan universities, examining specific barriers and identifying strategies to improve resource availability. By understanding these challenges and proposing solutions, the study aimed to contribute to the broader goal of fostering equitable SDG engagement within Kenyan higher education (Biberhofer et al., 2020; Nhamo et al., 2020; Cheong et al., 2021; Adeoye et al., 2021).

2.3.3 Sustainable Practices in Universities Supporting SDG Implementation

Sustainable practices within universities played a crucial role in advancing SDG implementation by providing practical examples of environmental stewardship and social responsibility that would influence both campus and community behaviours. Mwangi and Mutheu (2021) examined green campus initiatives across Kenyan universities, focusing on programs like recycling, energy-saving measures, and biodiversity conservation projects. Their case study found that campuses with well-established sustainability practices made a noticeable positive impact on their immediate environments, while simultaneously fostering eco-conscious behaviours among students and faculty. Similarly, Lozano et al. (2022) and Tilbury and Ryan (2020) highlighted that the success of these initiatives often depends on whether institutions actively integrate sustainability into campus culture, supported by strategic planning and resource allocation. These studies underscored that sustainable campus practices can have both educational and environmental benefits, illustrating the potential for universities to lead by example in achieving SDG goals.

A broader study by Sachs et al. (2022) compared sustainable practices across universities in Europe and Africa, noting significant differences in how these practices are implemented and supported. Using a survey of sustainability officers, the research found that European universities typically receive government support, which enables them to run comprehensive sustainability programs, whereas African institutions often rely on partnerships with external entities. Sachs et al. (2022) concluded that government support and funding stability are essential for impactful sustainability efforts, as European universities with consistent financial resources reported greater success in reducing campus carbon emissions and implementing sustainability-driven projects. Further, Mwangi and Mutheu (2021) and Tilbury and Ryan (2020) emphasized that universities with structured sustainability policies were more likely to achieve long-term environmental goals, demonstrating the importance of funding and policy in sustaining impactful campus initiatives.

In addition to funding, community partnerships have proven instrumental in advancing sustainable practices within universities. Yusuf and Ahmed (2023) conducted a study on Kenyan universities, finding that collaborations with local organizations significantly bolstered

resource availability and community participation in sustainability projects. These partnerships, which support initiatives like water conservation, waste management, and renewable energy programs, were found to be crucial for universities with limited internal resources. Similar findings emerged in Cheong and Park's (2022) study of Asian universities, which noted that collaboration with community stakeholders enhanced the visibility and impact of university-led sustainability efforts. By working with local organizations, universities can not only extend their sustainability reach but also foster a shared responsibility for environmental stewardship (Yusuf & Ahmed, 2023; Sachs et al., 2022).

Dedicated sustainability policies and roles within universities also enhanced the efficacy of sustainable practices. Cheong and Park (2022) used a mixed-methods approach to assess the impact of sustainability offices and dedicated sustainability staff in Asian universities, finding that institutions with clearly defined policies and roles achieved more successful outcomes in their green campus initiatives. Lozano et al. (2022) and Mwangi and Mutheu (2021) similarly highlighted that universities with established sustainability roles, such as sustainability officers, tend to be more effective in coordinating green activities, engaging students, and tracking environmental impact. These findings suggested that when universities formalize sustainability practices through dedicated offices and policies, they create a structured approach to SDG implementation that integrates environmental goals into all aspects of campus life.

Together, these studies illustrated that sustainable practices in universities were shaped by multiple factors, including funding availability, policy frameworks, institutional support, and community collaboration. While European universities often benefited from robust financial backing and policy frameworks, African and Asian universities were frequently dependent on external partnerships due to resource constraints. This study aimed to investigate sustainable practices within Kenyan universities, focusing on the roles of institutional support and community partnerships in facilitating SDG-related initiatives. By analysing the drivers and barriers to effective sustainable practices in Kenyan universities, this research sought to provide insights into how these institutions could enhance their contributions to SDG implementation in a context of limited resources (Mwangi & Mutheu, 2021; Sachs et al., 2022; Yusuf & Ahmed, 2023; Cheong & Park, 2022; Lozano et al., 2022).

2.4. Summary of Research Gaps

This section provided a summary of the research gaps identified from the literature reviewed, particularly concerning the role of universities in SDG implementation, the integration of SDG topics within curricula, accessibility of information for SDG engagement, and sustainable practices on campuses. While many studies had highlighted the importance of SDG awareness, curriculum integration, and institutional practices, there remained critical gaps in understanding how these factors could be effectively implemented, institutionalized, and scaled, especially in resource-constrained settings such as Kenya. Additionally, existing literature lacked comprehensive and consistent data on the impact of community partnerships and government support in sustaining SDG initiatives in universities across developing countries. Most studies focused on individual university initiatives rather than examining broader systemic efforts that could have enhanced SDG implementation across higher education institutions. Furthermore, little research had evaluated the long-term impact of SDG-focused education on student behaviour, career choices, and community engagement beyond graduation. The extent to which digital resources and technological advancements facilitated or hindered SDG awareness and engagement in academic institutions was also underexplored. Addressing these gaps was crucial for strengthening universities' contributions to sustainable development. The table below summarized these research gaps, providing insights into how this study contributed to the existing body of knowledge.



Table 2.1 Research Gaps

Author	Title	Findings	Gap in Study	The Study's Respond to the Gap
Leal Filho et al. (2021)	A Comparative Study of SDG Curriculum Integration in Higher Education	Found that European universities incorporating SDG topics across disciplines produced graduates better prepared to tackle sustainability issues, and cross-disciplinary SDG integration fostered a sustainability-focused culture.	Limited to European universities; lacks focus on curriculum integration challenges in African institutions like Kenyan universities.	This study focused on curriculum integration challenges specific to Kenyan universities, considering local institutional, resource, and policy limitations.
Lozano et al. (2022)	Curriculum Transformations for Sustainability Education in Higher Education	Demonstrated that structured, SDG-aligned curricula lead to higher levels of student engagement and environmental consciousness.	Focuses on U.S. and European universities, lacking insights into how Kenyan universities can adapt similar curricular approaches with limited resources.	The study investigated the extent of SDG curriculum alignment in Kenyan institutions, offering practical recommendations for implementation within resource-constrained environments.

Author	Title	Findings	Gap in Study	The Study's Respond to the Gap
Barth & Rieckmann (2020)	Interdisciplinary Approaches in SDG Education	Showed that interdisciplinary curriculum models improve critical thinking and collaboration among students.	Lacks practical strategies for institutions with limited resources to provide faculty training on SDG topics.	This study highlighted the institutional gaps in faculty development and suggested pathways for integrating SDG content without requiring extensive resources.
Mwangi & Mutua (2021)	SDG Integration in Kenyan Universities: A Mixed-Methods Study	Identified disparities in SDG curriculum implementation between public and private universities in Kenya.	Limited exploration of policy or funding interventions that could facilitate SDG integration.	The study examined institutional structures and made policy-focused recommendations to support SDG curriculum development in both public and private universities.
Tilbury & Ryan (2020)	The Role of Leadership in Effective SDG Curriculum Integration	Leadership and faculty development programs enhanced SDG curriculum effectiveness.	Does not address how to develop effective leadership and faculty development programs in	This study explored administrative support and resource challenges, recommending context-specific leadership

Author	Title	Findings	Gap in Study	The Study's Respond to the Gap
Biberhofer et al. (2020)	Digital Resources and SDG Engagement in European Universities	Online SDG resources increased independent student engagement.	resource-constrained settings. Limited to European context; lacks solutions for digital infrastructure gaps in Africa.	strategies for Kenyan universities. The study assessed information accessibility in Kenyan universities and identified practical interventions for improving digital access and resource dissemination.
Nhamo et al. (2020)	Information Accessibility for SDG Engagement in African Universities	Highlighted rural-urban disparities in digital access.	Does not explore how to address digital infrastructure limitations in Kenyan universities.	The study offered scalable solutions for improving SDG information access, especially in under-resourced campuses.
Cheong et al. (2021)	Impact of Open-Access Resources on SDG Engagement in Asian Universities	Found that open-access SDG content boosted student participation.	Focuses on Asia; lacks insight into African challenges with open-access resource use.	This study examined access to SDG materials in Kenyan institutions and the barriers to developing open-access platforms.

Author	Title	Findings	Gap in Study	The Study's Respond to the Gap
Adeoye et al. (2021)	Information Accessibility and SDG Awareness in Nigerian Universities	Positive correlation between digital resources and SDG awareness.	Lacks practical solutions for institutions without digital libraries.	The study evaluated awareness levels in Kenyan universities and proposed feasible alternatives to traditional digital libraries.
Mwangi & Mutheu (2021)	Green Campus Initiatives in Kenyan Universities	Sustainable practices such as recycling improved eco-behaviour.	Limited to environmental impacts; lacks coverage of social/community-based sustainability.	The study addressed both environmental and social aspects of sustainability practices on campuses, linking them to SDG engagement.
Cheong & Park (2022)	Sustainability Policies and Their Effectiveness in Asian Universities	Formal sustainability policies enhanced green outcomes.	Does not address policy challenges in African institutions.	The study reviewed policy gaps in Kenyan universities and recommended institutional frameworks for sustainability.
Lozano et al. (2022)	Institutional Support for Sustainability	Sustainability officers improved coordination and engagement.	Focused on Western institutions; lacks practical	This study evaluated administrative structures and proposed low-cost

Author	Title	Findings	Gap in Study	The Study's Respond to the Gap
	Officers in Higher Education		implementation models for Kenyan universities.	strategies to embed sustainability roles in Kenyan universities.



2.5 Conceptual Framework

The conceptual framework served as a visual and theoretical representation that aligned with the study's objectives, guiding the research approach and providing a basis for data collection and analysis. This study aimed to assess Kenyan universities' contributions to the implementation of the Sustainable Development Goals (SDGs) by exploring three core dimensions: integration of SDG-related topics in curricula, accessibility to information, and sustainable practices. These components were interrelated and collectively influenced the level of SDG awareness and engagement. By examining these aspects, the framework highlighted the role of universities in promoting sustainable development within and beyond academic boundaries. This was illustrated in the diagram below:

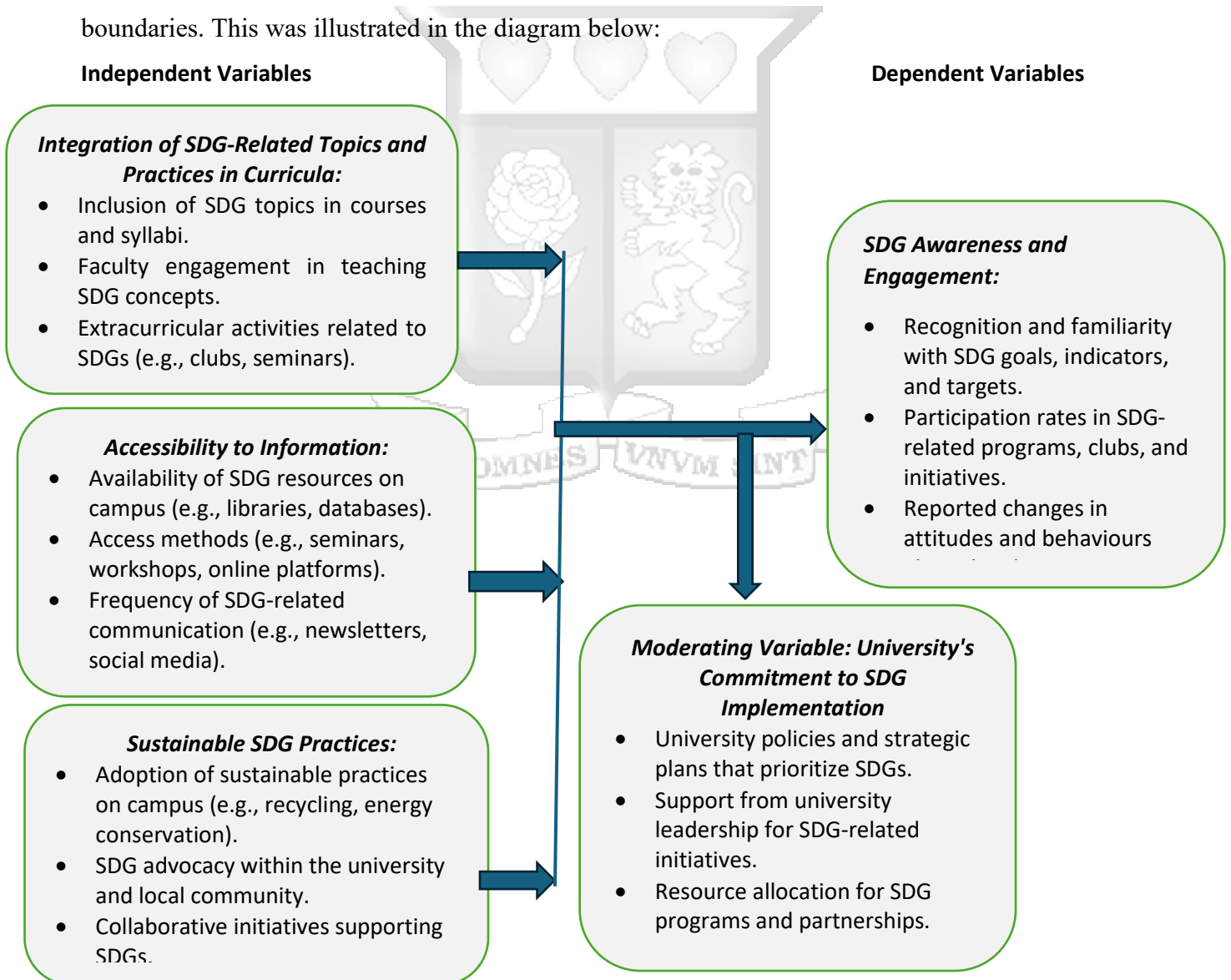


Figure 2.1 Conceptual Framework

Source: Researcher (2025)

2.6 Operational Definition of Research Variables

Operationalization refers to the process of converting theoretical concepts into quantifiable variables to aid in data collection and analysis. In this study, the variables were defined and structured according to the factors that influenced SDG awareness and engagement within Kenyan universities. A Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), was employed to assess respondents' perceptions of each variable. Table 2.2 outlined the variables and their respective measurement indicators, facilitating a systematic evaluation of how SDG-related curricular integration, information accessibility, and sustainable practices contributed to SDG awareness and engagement. This approach ensured that abstract concepts were transformed into concrete, measurable indicators for empirical investigation.

Table 2.2 Operationalization of Variables

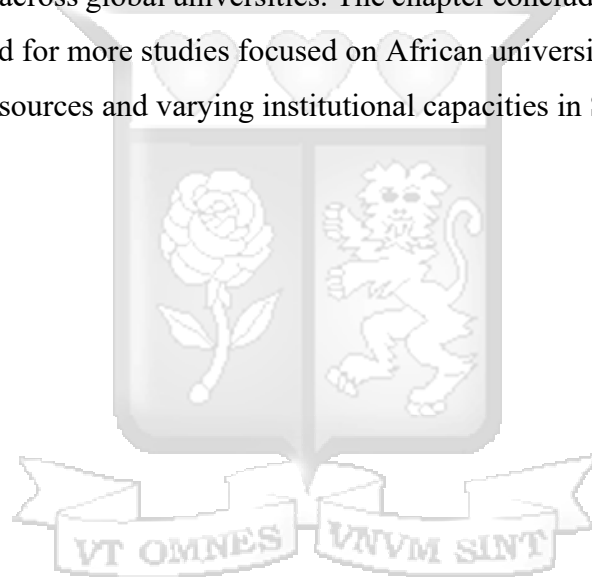
Variable	Type	Indicators	Measurement	Type of Analysis
SDG Awareness and Engagement	Dependent	<ul style="list-style-type: none"> Recognition and familiarity with SDG goals Participation in SDG-related programs Reported changes in SDG-aligned attitudes and behaviors 	Ordinal Scale (5-Pt Likert Scale) Qualitative statements	Descriptive Inferential
Integration of SDG Topics and	Independent	<ul style="list-style-type: none"> Inclusion of SDG topics in courses 	Ordinal Scale (5-Pt Likert Scale)	Descriptive Inferential

Practices in Curricula		<ul style="list-style-type: none"> • Faculty engagement in teaching SDG concept • Extracurricular SDG-related activities 	Qualitative statements	
Accessibility to Information	Independent	<ul style="list-style-type: none"> • Availability of SDG resources on campus • Access methods (e.g., seminars, online platforms) • Frequency of SDG communication 	Ordinal Scale (5-Pt Likert Scale) Qualitative statements	Descriptive Inferential
Sustainable SDG Practices	Independent	<ul style="list-style-type: none"> • Adoption of sustainable practices on campus • SDG advocacy within university and local community • Collaborative initiatives supporting SDGs 	Ordinal Scale (5-Pt Likert Scale) Qualitative statements	Descriptive Inferential
University's Commitment to SDG Implementation	Moderator	<ul style="list-style-type: none"> • University policies and strategic plans for SDGs • Leadership support for SDG initiatives 	Ordinal Scale (5-Pt Likert Scale) Qualitative statements	Descriptive Inferential

- Resource allocation for SDG programs

2.7 Chapter Summary

This chapter reviewed the theoretical foundations and empirical literature relevant to the study's focus on SDG awareness and engagement in universities. The theoretical framework integrated the Dynamic Capabilities Theory, Knowledge-Based Theory of the Firm, and Knowledge Gap Theory to analyse institutional adaptations and challenges in promoting SDG knowledge. The empirical section covered studies on curriculum integration of SDGs, information accessibility, and sustainable practices across global universities. The chapter concluded by identifying research gaps, particularly the need for more studies focused on African universities, to understand unique challenges like limited resources and varying institutional capacities in SDG implementation.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the research methodology applied in this study to assess Kenyan universities' contributions to Sustainable Development Goals (SDG) implementation. The methodology encompassed the research philosophy, design, target population, sampling approach, data collection methods, instrument development, and statistical analysis techniques, with a focus on inferential statistics using multiple linear regression. Diagnostic tests, along with reliability and validity assessments, ensured methodological rigor and enhanced the study's contribution to evidence-based policymaking within the educational sector.

3.2 Research Philosophy

The Research philosophy refers to the beliefs and assumptions about the development of knowledge that underpin a research approach (Saunders, Lewis, & Thornhill, 2019). It provides a foundation for research methods, guiding the researcher's choices in data collection and analysis. This study adopted a positivist research philosophy which aligned with quantitative methodologies, which emphasized objective measurement and statistical analysis (Creswell, 2014). The positivist approach was appropriate as it facilitated the systematic examination of variables influencing SDG awareness and engagement through empirical observation and statistical testing (Neuman, 2016). This philosophy aligned with the study's aim of producing generalizable insights by examining measurable relationships between curriculum integration, information accessibility, sustainable practices, and SDG engagement within Kenyan universities.

3.3 Research Design

Research design refers to the overall strategy and structure that guides the process of collecting and analysing data to answer the research questions effectively (Creswell, 2014). It includes the methods and procedures for data collection and analysis, aligning the research objectives with the chosen methodology. A descriptive correlational research design was selected to investigate relationships between independent variables (integration of SDG-related topics in curricula, accessibility to information, and sustainable practices) and the dependent variable (SDG

awareness and engagement). This design supported data collection and analysis of cross-sectional data from multiple universities, providing a snapshot of SDG implementation within Kenyan academia (Saunders, Lewis, & Thornhill, 2019). The study leveraged multiple linear regression for predictive analysis, allowing for insight into how individual factors contributed to overall SDG engagement levels.

3.4 Target Population

Target population refers to the entire group of individuals or entities relevant to the study from which a sample is drawn for data collection and analysis (Cooper & Schindler, 2014). This population represents those most impacted by or engaged with the research topic, providing a basis for generalizing findings. The study target population comprised individuals within accredited Kenyan universities who were involved in or affected by Sustainable Development Goal (SDG) related activities. Specifically, the study focused on faculty members, administrative staff, and student, as they represented the primary actors in SDG-related programming and policy influence within universities. According to the Commission for University Education (CUE), there were 74 accredited universities in Kenya as of 2021 (CUE, 2021). However, the unit of analysis for this study was the population within the universities and the units of observation were the individual faculty members, administrators, and students who directly participated in the study. This group was selected because they actively engage with institutional policies and the curriculum integration efforts that align with the SDGs. By targeting individuals rather than institutions, the study aimed to capture the perceptions and practices of those most directly involved in university level SDG initiatives.

3.5 Sampling Design

Sampling refers to the process of selecting a subset of individuals or entities from a target population to represent the entire group in a study (Creswell, 2014). The sampling method aims to ensure that the selected participants accurately reflect the characteristics of the broader population, making it possible to generalize findings. The study adopted a stratified random sampling technique to ensure representation across different stakeholder groups within universities and to address diversity in institutional roles. The basis of the strata was the three distinct categories of university actors: faculty members, administrative staff, and students. This stratification ensured that insights were gathered from all key functional groups influencing or

experiencing the implementation of SDGs in university settings. Although the number of accredited universities was 74, the study population remained to be the individuals within these institutions. Therefore, Cochran's formula was applied to determine the minimum sample size required for statistical validity, assuming a large population (estimated to be in the hundreds of thousands across all universities). The formula was as follows:

$$n_0 = \frac{Z^2 \cdot p \cdot (1 - p)}{e^2}$$

$$n_0 = \frac{1.96^2 \cdot 0.5 \cdot (1 - 0.5)}{0.05^2} \approx 384.16$$

where:

n_0 = initial sample size

Z = Z-value for the desired confidence level (e.g., 1.96 for 95% confidence)

p = estimated proportion of the population (assumed at 0.5 for maximum variability)

e = margin of error (commonly 0.05 for a 95% confidence level)

This resulted in a minimum sample size of 385 respondents. To increase representativeness and capture broader perspectives, the study aimed for approximately 20 participants per university, distributed as follows: 10 students, 5 faculty members, and 5 administrative staff per institution. This yielded a target sample size of 1,480 respondents across the 74 universities. Ultimately, 388 valid responses were obtained, thereby slightly exceeding the minimum requirement. This was considered sufficient for generalizability, and no additional sampling adjustments were needed.

3.6 Data Collection Methods

Data was collected using a structured questionnaire developed to capture perceptions and practices related to SDG awareness, accessibility of information, and institutional sustainability practices. The instrument incorporated five-point Likert scale questions (1 = Strongly Disagree to 5 = Strongly Agree) to standardize responses and support quantitative analysis (Bradburn, Sudman, & Wansink, 2004). The questionnaire was pilot tested among a group of 10 consisting of faculty members, non-teaching and students. Feedback from the pilot was used to refine item

wording, ensure clarity, and confirm internal consistency. Minor revisions were made, particularly in the phrasing of questions on policy engagement and sustainability initiatives. The pilot results confirmed that the questionnaire was understandable and suitable for full-scale deployment. The questionnaires were administered exclusively through online platforms, with email distribution employed as the primary method to enhance response rates.

3.7 Research Quality

3.7.1 Reliability Test

The reliability of the instrument was assessed using Cronbach's alpha, ensuring internal consistency among the items measuring each construct (e.g., awareness, information accessibility, sustainable practices). A Cronbach's alpha value of 0.7 or higher was considered acceptable for demonstrating instrument reliability (Tavakol & Dennick, 2011).

3.7.2 Validity Test

Content and construct validity were examined through expert reviews and pilot testing to ensure that the questionnaire items accurately captured SDG-related constructs. Construct validity was further supported by factor analysis to verify that items aligned with the respective latent variables being measured (Field, 2018).

3.8 Data Analysis and Presentation

3.8.1 Descriptive Statistics

Descriptive statistics, including means, frequencies, and standard deviations, provided an overview of the demographic characteristics and distribution of responses related to each variable. These analyses offered a preliminary understanding of SDG engagement levels and sustainable practices within Kenyan universities.

3.8.2 Inferential Statistics

Multiple linear regression analysis was conducted to examine the relationships between independent variables (SDG-related curricular integration, accessibility to information, sustainable practices) and the dependent variable (SDG awareness and engagement). The multiple regression model was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y = Dependent variable (SDG awareness and engagement)

β_0 = the model intercept

β_{1-3} = Coefficient of independent variables

X_1 – Integration of SDG-related topics in curricula

X_2 – Accessibility to information

X_3 – Sustainable practices

X_4 – will cover the moderating variable (University's Commitment to SDG Implementation)

ε = Error Term

3.8.3 Statistical Assumptions Testing

To ensure the validity and reliability of the multiple linear regression analysis, a series of statistical assumption tests were conducted:

- i) **Multicollinearity Test:** The Variance Inflation Factor (VIF) method was used to assess multicollinearity among the independent variables. A VIF value below 5 indicated an acceptable level of multicollinearity, suggesting that the independent variables did not have a strong linear relationship with each other (Shrestha, 2020).
- ii) **Homoscedasticity Test:** The Levene's Test for Homogeneity of Variances was used to assess homoscedasticity. A non-significant p-value (Sig. > 0.05) indicated that the variances were equal, satisfying the assumption of homoscedasticity (Bobbitt, 2020).
- iii) **Normality Test:** The Kolmogorov-Smirnov (KS) and Shapiro-Wilk tests were used to assess the normality of residuals. A p-value greater than 0.05 indicated that the residuals followed a normal distribution (Razali & Wah, 2019).
- iv) **Linearity Test:** The Rainbow test and residual plots were used to assess linearity. A p-value greater than 0.05 indicated that the assumption of linearity was not violated. Additionally, the residual plot examined for a random dispersion of residuals around the zero line, which was to further confirm whether the linearity assumption was satisfied.

The results of these tests were summarized in tables and figures, including VIF values, residual plots, and p-values, to confirm that the assumptions of multiple linear regression were met, thus ensuring reliable and accurate analysis.

3.8 Ethical Consideration

Ethical considerations are vital in conducting research, particularly when human participants are involved. Approval for the study was obtained from the National Council for Science, Technology, and Innovation (NACOSTI) as well as the Strathmore University Ethics Committee. An introductory letter accompanied the questionnaires, detailing the study's purpose and how the data was to be utilized. Participants were guaranteed confidentiality, and informed consent was secured prior to their involvement. No personal identifiers, such as names or contact information, was collected, ensuring that respondents remained anonymous. The data gathered was used exclusively for academic purposes and was stored securely to safeguard participants' privacy (Drolet et al., 2022).

3.9 Chapter Summary

This chapter outlined the methodology used to investigate Kenyan universities' roles in SDG implementation. It began with the research philosophy, adopting a positivist approach suitable for quantitative analysis, and proceeded with a descriptive correlational research design aimed at examining relationships between variables related to SDG integration. The target population included students, faculty, and administrators from accredited universities in Kenya, with a sample size determined through Cochran's formula. Data collection used structured questionnaires, with a uniform Likert scale to facilitate analysis. The chapter also addresses research quality through reliability and validity testing, data analysis methods like descriptive and inferential statistics, and diagnostic tests to ensure robustness in statistical assumptions. Ethical considerations are detailed to maintain the integrity of the research process.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

The fourth chapter was utilized in the presentation of the findings from the collected research data from the field work. The study applied both qualitative and quantitative analysis approaches. The main sections focused on the background profile, descriptive analysis, correlation and regression analysis. Lastly, a chapter summary was presented.

4.2 Background Information

The background information analysed the profile of the respondents and the universities that were the focus of the survey, as well as the response rate achieved from the fieldwork.

4.2.1 Response Rate

The data collection process was conducted between December 2023 and January 2024. A total of 388 complete questionnaires were received, slightly exceeding the statistically determined minimum sample size of 384 based on Cochran's formula (Cochran, 1977). While the broader target was to collect data from approximately 1,480 participants across 74 universities (20 per institution), this larger figure represented an aspirational distribution to enhance representativeness rather than a required sample threshold (Creswell, 2014; Saunders, Lewis, & Thornhill, 2019). The 388 responses constituted a 100% realization of the minimum required sample size, making the dataset suitable for valid statistical analysis (Mugenda & Mugenda, 2003). The respondents included a diverse mix of students, faculty, and administrative staff, aligned with the study's stratification approach (Bryman, 2016). Although the total number of responses did not meet the extended target of 1,480, the actual sample surpassed the statistically required threshold and thus was considered adequate for generalization and inferential analysis (Cooper & Schindler, 2014). The response rate achieved was therefore sufficient, reliable, and representative for the purposes of the study.

4.2.2 Profile of the Respondents

The study sought to understand the demographic distribution of the respondents. A summary of the respondent profile was presented in Table 4.1.

Table 4.1 Respondents profile

		Frequency	Percent
Gender	Male	235	60.57
	Female	153	39.43
	Total	388	100.0
Age Group	18-24	163	42.01
	25-34	69	17.78
	35-44	91	23.45
	45 and above	65	16.75
	Total	388	100.0
University Type	Private	197	50.77
	Public	191	49.23
	Total	388	100.0
Education Level	Certificate/Diploma	44	11.34
	Bachelor's Degree	222	57.22
	Masters	92	23.71
	PhD	30	7.73
	Total	388	100.0
Position in the University	Administrative	103	26.55
	Faculty	83	21.39
	Student	202	52.06
	Total	388	100.0

The analysis of the data showed that 60.57% of respondents were male, while 39.43% were female, indicating a slightly higher representation of male respondents in the study. This gender distribution suggests that SDG awareness and engagement strategies within universities must ensure inclusivity, particularly in reaching female students and staff, who constituted a smaller proportion of the respondents. Most of the respondents (42.01%) were between the ages of 18-24 years, followed by 23.45% aged 35-44 years. The lowest representation came from respondents aged 45 years and above (16.75%). This age distribution reflected a higher number of student participants, which was expected given the typically larger student population in

universities compared to faculty and administrative staff. Given that younger individuals are the primary targets of sustainability education, this distribution highlights the need for universities to strengthen SDG-focused programs tailored to students while also increasing faculty and staff engagement in sustainability initiatives.

In terms of university type, the sample was almost evenly split, with 50.77% of respondents from private universities and 49.23% from public universities. This balance ensures that the study findings reflect the SDG engagement levels across both public and private institutions, providing a comprehensive understanding of how different university structures integrate sustainability education. Regarding education level, the highest proportion of respondents (57.22%) had a bachelor's degree, followed by 23.71% with a master's degree, while 11.34% had a certificate/diploma, and 7.73% had a PhD. This distribution suggests that most perspectives on SDG awareness come from undergraduate students, who are typically at the forefront of sustainability initiatives within universities. The lower representation of PhD holders implies that postgraduate involvement in SDG engagement may need to be reinforced through advanced research and policy-driven sustainability projects within universities.

When analyzing the respondents' roles in the university, students made up the largest group (52.06%), followed by administrative staff (26.55%), and faculty members (21.39%). This breakdown indicates that students play a critical role in SDG awareness and engagement efforts within universities, as they represent the majority of those directly benefiting from sustainability education. However, the significant proportion of administrative staff and faculty suggests that universities must integrate SDG principles not only in student learning but also in university operations and governance structures. Faculty members, who comprised 21.39% of the sample, are key stakeholders in delivering SDG-focused curricula, underscoring the need for enhanced faculty training and support in sustainability education. The representation of administrative staff further highlights their role in implementing and managing SDG-related policies, suggesting that effective engagement strategies should target university leadership, faculty, and students collectively to ensure holistic SDG integration.

4.3 Descriptive Analysis

The main research data was collected using quantitative analysis techniques with a 5-point Ordinal scale. The analysed research data was presented using means, with the following scale adopted in the interpretation of the findings: (5.00-4.21) indicated strongly agree, (4.20-3.41)

indicated agree, (3.40-2.61) indicated moderate agreement, (2.60-1.81) indicated disagree, and (1.80-1.00) indicated strongly disagree.

4.3.1 SDG Awareness and Engagement (Dependent Variable)

This section examined the extent to which respondents were aware of and engaged with SDGs. It assessed their familiarity with SDGs, their understanding of specific SDG goals, and whether learning about SDGs had influenced their behaviour toward sustainability.

Table 4.2 SDG Awareness and Engagement

	N	Mean	Std. Deviation
How would you rate your understanding of the goals, targets, and indicators associated with the SDGs?	388	2.5155	.69866
How familiar are you with the United Nations Sustainable Development Goals (SDGs)?	388	2.7345	.96937
Do you think learning about SDGs has influenced your behaviour or perspective towards sustainability?	388	3.3708	1.19499

The results indicated a moderate level of understanding of SDG goals, targets, and indicators among respondents ($M = 2.52$, $SD = 0.70$). This suggested that while there was some level of awareness, a gap remained in deeper knowledge and comprehension of specific SDG objectives. Similarly, familiarity with SDGs recorded a mean score of 2.73 ($SD = 0.97$), further affirming that while students and faculty were somewhat aware of the SDGs, they did not have an in-depth grasp of their full scope and implementation strategies. However, the influence of SDG learning on behavioural change scored $M = 3.37$ ($SD = 1.19$), which fell in the high category. This suggested that while knowledge of SDGs was moderate, respondents who were aware of them perceived themselves as translating this awareness into sustainable actions and behaviour adjustments.

Participants further noted that universities needed to strengthen structured SDG education beyond general awareness by incorporating it into the core curriculum. Additionally, universities should have established more collaborative sustainability initiatives that

empowered students and faculty to apply SDG principles practically. Some suggested the introduction of sustainability training programs and university-wide SDG policies to enhance long-term engagement.

4.3.2 Integration of SDG-Related Topics and Practices in Curricula

This section evaluated the extent to which SDGs had been integrated into university curricula and whether respondents perceived this integration as effective. It also examined the level of participation in SDG-related academic activities within universities.

Table 4.3 Integration of SDG-Related Topics and Practices in Curricula

	N	Mean	Std. Deviation
How effective do you think the integration of SDGs in the curriculum has been?	388	1.85567	1.11127
Which SDG-related activities have you participated in at your university?	388	12.40721	4.45873

The results revealed a very low perception of SDG integration into university curricula ($M = 1.86$, $SD = 1.11$), suggesting that students and faculty did not find the current curriculum sufficient in addressing sustainability education. This highlighted a potential gap in formal SDG education within university programs, necessitating the need for curriculum restructuring to incorporate sustainability topics more effectively. Conversely, participation in SDG-related activities recorded a mean score of 12.41 ($SD = 4.46$). Unlike the other items measured on a 5-point Likert scale, this question utilized a multiple-response format where respondents were allowed to select all SDG-related activities they had participated in. The higher mean reflected the cumulative number of activities selected per respondent (e.g., attending workshops, joining sustainability clubs, taking part in tree planting or clean-up initiatives). This suggested that while formal curriculum integration was weak, universities still provided opportunities for students and faculty to engage in sustainability activities outside the academic setting. These included student-led sustainability clubs, research projects, and university-organized workshops.

Participants further suggested that universities should have integrated SDG-related courses into mandatory general education requirements and developed faculty training programs on sustainability teaching. They also emphasized the importance of fostering interdisciplinary approaches in SDG education to ensure its relevance across diverse academic disciplines.

4.3.3 Accessibility to Information

This section examined how frequently respondents encountered SDG-related information within their universities and the effectiveness of institutional efforts, such as workshops and conferences, in disseminating SDG knowledge.

Table 4.4 Accessibility to Information

	N	Mean	Std. Deviation
How often do you come across information about the SDGs in your daily activities at the university?	388	2.05670	.69094
How effective are workshops, conferences, and seminars organized by the university in disseminating information about SDGs?	388	1.84536	1.12606
Where did you first hear about the SDGs? (Select all that apply)	388	8.61083	5.91198

The findings indicated that respondents only moderately came across SDG-related information in their daily university activities ($M = 2.06$, $SD = 0.69$). This suggested that while sustainability information existed within academic environments, it was not actively disseminated or promoted as part of routine educational exposure. Additionally, university-organized workshops, conferences, and seminars on SDGs were rated very low in effectiveness ($M = 1.85$, $SD = 1.13$), indicating that existing awareness initiatives were not sufficiently engaging or impactful. This suggested a need for universities to have restructured how SDG-related knowledge was communicated, possibly through more interactive learning modules, research discussions, or digital content strategies.

Participants further noted that the limited availability of SDG-focused digital resources, lack of interactive SDG learning materials, and inadequate institutional commitment to sustainability campaigns hindered information accessibility. They recommended the development of

university SDG portals, partnerships with international sustainability organizations, and leveraging social media platforms for more effective SDG communication.

4.3.4 Sustainable SDG Practices

This section assessed the extent to which respondents engaged in sustainability practices such as energy conservation, waste reduction, and promoting environmental sustainability in daily life.

Table 4.5 Sustainable SDG Practices

	N	Mean	Std. Deviation
I switch off electrical appliances at home that I don't need when I am not around	388	1.95103	.68213
I try to reduce waste at home by collecting materials that can be recycled.	388	1.93557	1.08715
I turn off the lights of the classroom/office after the class finishes or the room gets empty	388	2.43557	1.43542
I read documents on-screen rather than printing them out.	388	2.14691	.86659
How often do you talk about environmental sustainability with friends and family?	388	3.40979	1.21132

The findings indicated a very low level of active engagement in energy conservation and waste reduction. Respondents reported low engagement in switching off unnecessary electrical appliances ($M = 1.95$, $SD = 0.68$) and recycling waste ($M = 1.94$, $SD = 1.09$), suggesting that although sustainability was acknowledged, proactive sustainable behaviours remained weak. Similarly, turning off classroom and office lights when not in use was rated as moderate ($M = 2.44$, $SD = 1.43$), indicating some level of awareness but inconsistent implementation of energy-saving habits. The use of digital documents instead of printing was also rated moderate ($M = 2.15$, $SD = 0.87$), suggesting a growing trend toward sustainable consumption practices, though there was still room for improvement.

Participants further noted that while many students and faculty members supported sustainability in theory, there was a disconnect between awareness and behavioural change. They suggested introducing incentives for sustainable actions, such as university-wide energy-

saving challenges, and implementing stronger sustainability policies, such as paperless coursework and recycling initiatives, to reinforce sustainable behaviour within academic institutions.

4.4 Correlation Analysis

The aim of correlation analysis was to examine the direction and significance of the relationships between the study variables. The study adopted Spearman's rank correlation coefficient, a non-parametric measure suitable for ordinal data, to assess the strength and direction of associations. The significance level was set at 0.01 ($p < 0.01$) to determine statistically significant relationships. The correlation matrix is presented in Table 4.6.

Table 4.6 Correlation Matrix

			SDG Awareness and Engagement	Integration of SDG-Related Topics and Practices in Curricula	Accessibility to Information	Sustainable SDG Practices
Spearman's rho	SDG Awareness and Engagement	Correlation Coefficient	1.000			
		Sig. (2-tailed)	.			
		N	388			
Integration of SDG-Related Topics and Practices in Curricula	SDG Awareness and Engagement	Correlation Coefficient	.689**	1.000		
		Sig. (2-tailed)	.000	.		
		N	388	388		
Accessibility to Information	Integration of SDG-Related Topics and Practices in Curricula	Correlation Coefficient	.666**	.702**	1.000	
		Sig. (2-tailed)	.000	.000	.	
		N	388	388	388	
Sustainable SDG Practices	Accessibility to Information	Correlation Coefficient	.743**	.692**	.647**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	388	388	388	388

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation analysis revealed strong and statistically significant positive relationships among all study variables. The results indicated that Integration of SDG-Related Topics and Practices in

Curricula had a strong positive correlation with SDG Awareness and Engagement ($\rho = 0.689$, $p < 0.01$), suggesting that structured SDG-aligned curricula enhance awareness and engagement levels among university students and staff. Similarly, Accessibility to Information showed a strong positive correlation with SDG Awareness and Engagement ($\rho = 0.666$, $p < 0.01$), implying that increased access to SDG-related resources contributes to higher levels of awareness and participation. The strongest relationship was observed between Sustainable SDG Practices and SDG Awareness and Engagement ($\rho = 0.743$, $p < 0.01$), indicating that members of university communities who actively participate in sustainability initiatives significantly influenced SDG awareness and involvement. Additionally, Integration of SDG-Related Topics in Curricula and Accessibility to Information exhibited a high correlation ($\rho = 0.702$, $p < 0.01$), emphasizing that universities embedding SDG principles into their academic programs also tend to provide better access to SDG-related information.

4.5 Statistical Assumptions Tests

4.5.1 Test for Multicollinearity

Multicollinearity occurs when independent variables in a regression model are highly correlated, leading to redundancy and unreliable coefficient estimates (Hair et al., 2019). The Variance Inflation Factor (VIF) and Tolerance Values were used to assess multicollinearity, as presented in Table 4.10. A VIF value below 5 and a Tolerance value above 0.1 indicated that multicollinearity was not a concern in the model (Gujarati & Porter, 2020). The findings in Table 4.10 revealed that all independent variables had VIF values close to 1, suggesting no significant correlation among the predictors. This confirmed that each independent variable contributes uniquely to explaining variations in SDG Awareness and Engagement, thereby ensuring reliable regression estimates.

Table 4.7 Test of Multicollinearity

Model	Variable	Collinearity Statistics	
		Tolerance	VIF
2	Integration of SDG-Related Topics and Practices in Curricula	1.0066	0.9934
	Accessibility to Information	1.0104	0.9897
	Sustainable SDG Practices	1.0019	0.9981

University's Commitment to SDG Implementation	1.0089	0.9912
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a. Dependent Variable: SDG Awareness and Engagement

4.5.2 Test for Homoscedasticity

Homoscedasticity assumes that the variance of residuals remains constant across different levels of the independent variables. The Levene's Test for Homogeneity of Variances was used to evaluate whether the dataset met this assumption, as shown in Table 4.11. A non-significant p-value (Sig. > 0.05) in Levene's test indicated homoscedasticity, whereas a significant p-value (Sig. < 0.05) suggested heteroscedasticity (Tabachnick & Fidell, 2019). The results showed that Integration of SDG-Related Topics in Curricula (p = 0.1080), Sustainable SDG Practices (p = 0.5543), Accessibility to Information (p = 0.0564) and University's Commitment to SDG Implementation (p = 0.0657) met the homoscedasticity assumption.

Table 4.8 Test of Homogeneity of Variances

Variable	Levene's Statistic	df1	df2	Sig.
Integration of SDG-Related Topics and Practices in Curricula	1.4691	16	371	0.1080
Accessibility to Information	4.4447	3	384	0.0564
Sustainable SDG Practices	0.6971	3	384	0.5543
University's Commitment to SDG Implementation	2.2251	4	383	0.0657

4.5.3 Test for Normality

Normality assumes that the residuals of the regression model follow a normal distribution, which is essential for valid significance testing (Pallant, 2020). The Kolmogorov-Smirnov (KS) and Shapiro-Wilk tests were used to assess normality, as presented in Table 4.12. A non-significant p-value (Sig. > 0.05) suggested normality, whereas a significant p-value (Sig. < 0.05) indicated that the variable deviated from a normal distribution (Razali & Wah, 2019). The findings showed that all variables had p-values above 0.05, indicating that the dataset met the normality assumption. This suggested that the residuals are normally distributed, validating the use of multiple linear regression.

Table 4.9 Shapiro-Wilk Normality Test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SDG Awareness and Engagement	.3888	387	.078	.7316	387	.080
Integration of SDG-Related Topics and Practices in Curricula	.1622	387	.087	.8598	387	.092
Accessibility to Information	.3844	387	.062	.7000	387	.059
Sustainable SDG Practices	.3284	387	.055	.6867	387	.062
University's Commitment to SDG Implementation	.2944	387	.052	.7977	387	.055

4.5.4 Test of Linearity

Linearity assumes a linear relationship between the independent and dependent variables, ensuring that the regression model accurately captures the relationship (Montgomery et al., 2021). The Rainbow test and residual plot were used to assess linearity. The Rainbow test yielded an F-statistic of 1.3887 and a p-value of 0.0812, which is greater than 0.05, indicating that the linearity assumption was not violated. Additionally, the residual plot showed a random scatter of residuals around the zero line without a distinct pattern, further supporting the linearity assumption. These results confirmed that the regression model satisfied the linearity requirement, making it appropriate for further analysis.

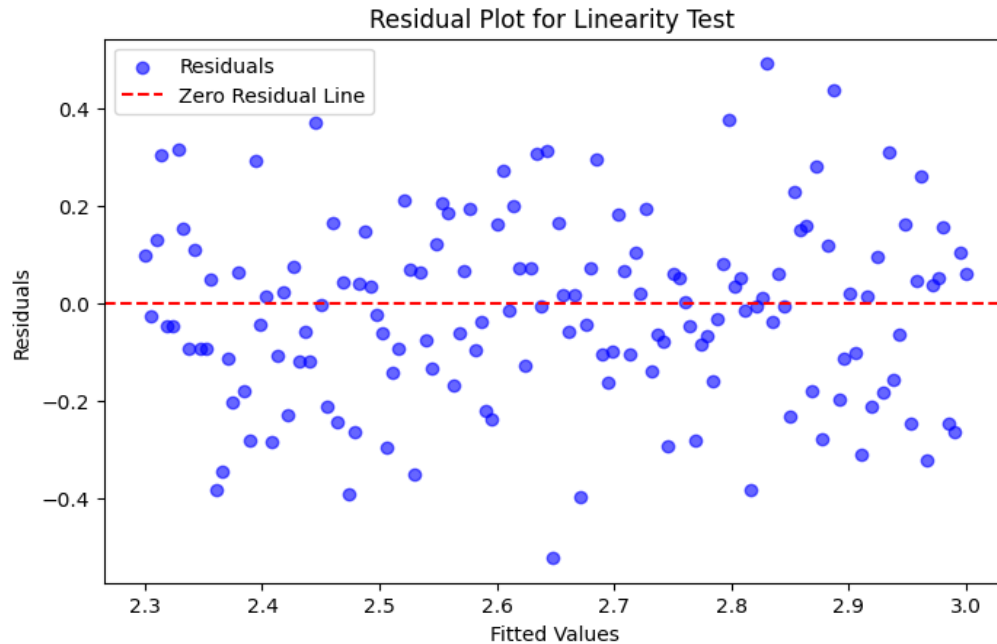


Figure 4.1 Residual Plot for Linearity Test

Source: Author (2025)

4.6 Regression Analysis

Regression analysis was conducted to examine the influence of integration of SDG-related topics in curricula, accessibility to information, and sustainable SDG practices on SDG awareness and engagement within universities. The study employed multiple linear regression to assess the strength and direction of relationships among the variables. The analysis also included the university’s commitment to SDG implementation as an additional predictor to determine its moderating effect.

Table 4.10 Regression Coefficients Summary

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.478	.187		13.267	.926
Integration of SDG-Related Topics and Practices in Curricula	.013	.011	.062	1.226	.277
Accessibility to Information	-.074	.043	-.085	-1.698	.002

	Sustainable SDG Practices	.093	.034	.137	2.732	.055
2	(Constant)	2.206	.206		12.305	.450
	Integration of SDG-Related Topics and Practices in Curricula	.011	.012	.066	1.201	.300
	Accessibility to Information	-.072	.046	-.089	-1.645	.008
	Sustainable SDG Practices	.093	.037	.140	2.748	.086
	University's Commitment to SDG Implementation	-.028	.044	-.031	-.609	.576

a. Dependent Variable: SDG Awareness and Engagement

The analysis indicated that sustainable SDG practices had the highest positive influence on SDG awareness and engagement ($\beta = 0.137$, $p = .055$ in Model 1, and $\beta = 0.140$, $p = .086$ in Model 2). This suggested that universities with stronger sustainability practices tended to foster higher awareness and engagement with SDGs. Integration of SDG-related topics in curricula had a weak but positive relationship with SDG awareness and engagement ($\beta = 0.062$, $p = .277$ in Model 1, and $\beta = 0.066$, $p = .300$ in Model 2), though the effect was not statistically significant. This implied that while embedding SDGs in curricula may have played a role in awareness, it was not the strongest determinant of engagement. Accessibility to information was found to have had a negative and statistically significant effect on SDG awareness and engagement ($\beta = -0.085$, $p = .002$ in Model 1, and $\beta = -0.089$, $p = .008$ in Model 2). This suggested that information accessibility alone did not necessarily enhance SDG engagement and may have indicated that information was available but not effectively utilized. Additionally, the university's commitment to SDG implementation showed a negative but insignificant effect on SDG awareness and engagement ($\beta = -0.031$, $p = .576$). This suggested that while institutional commitment to SDGs was crucial, other factors may have had a more direct impact on engagement.

Table 4.11 Regression Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
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1	.933 ^a	.870	.867	.24935
2	.934 ^b	.872	.867	.24962

a. Predictors: (Constant), Integration of SDG-Related Topics and Practices in Curricula, Accessibility to Information, Sustainable SDG Practices

b. Predictors: (Constant), Integration of SDG-Related Topics and Practices in Curricula, Accessibility to Information, Sustainable SDG Practices, University's Commitment to SDG Implementation

The results indicated a high coefficient of determination (R^2), meaning that a substantial proportion of the variability in SDG awareness and engagement was explained by the independent variables. In Model 1, an R^2 value of 0.870 suggested that 87.0% of the variation in SDG awareness and engagement was explained by the integration of SDG-related topics in curricula, accessibility to information, and sustainable SDG practices. When the university's commitment to SDG implementation was included in Model 2, R^2 slightly increased to 0.872, indicating a minor improvement in explanatory power. The adjusted R^2 remained stable at 0.867 in both models, suggesting that adding the university's commitment to SDG implementation did not significantly alter the overall fit of the model. The standard error of the estimate remained low, further confirming the reliability of the model in predicting SDG awareness and engagement.

Table 4.12 ANOVA Summary

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.049	3	18.012	289.694	.000 ^b
	Residual	10.757	385	.062		
	Total	82.805	388			
2	Regression	72.213	4	10.316	165.564	.000 ^c
	Residual	10.592	384	.062		
	Total	82.805	388			

a. Dependent Variable: SDG Awareness and Engagement

b. Predictors: (Constant), Integration of SDG-Related Topics and Practices in Curricula, Accessibility to Information, Sustainable SDG Practices

c. Predictors: (Constant), Integration of SDG-Related Topics and Practices in Curricula, Accessibility to Information, Sustainable SDG Practices, University's Commitment to SDG Implementation

The ANOVA results indicated that the regression model was statistically significant in predicting SDG awareness and engagement ($F = 289.694$, $p < 0.05$ for Model 1 and $F = 165.564$, $p < 0.05$ for Model 2). This confirmed that the independent variables; SDG-related topics integration,

accessibility to information, sustainable SDG practices, and university commitment to SDG implementation had a statistically significant effect on SDG awareness and engagement.



CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section presented a summary of the findings, as well as a discussion of the findings based on each objective. The chapter also presented the study conclusion, recommendations, and suggested various areas for further research.

5.2 Summary

This study examined the role of Kenyan universities in advancing Sustainable Development Goals (SDGs) by assessing the integration of SDG-related topics and practices within curricula, the effect of information accessibility on SDG awareness and engagement, and the adoption of sustainable practices in support of SDG implementation. The study applied a positivist research philosophy with a descriptive correlational research design to explore relationships between the key variables. Data was collected from students, faculty, and administrative staff across 74 accredited universities in Kenya using structured questionnaires. The study employed both descriptive and inferential statistical analyses, including correlation and multiple linear regression, to evaluate the significance of the relationships between the independent variables (curriculum integration, information accessibility, and sustainable practices) and the dependent variable (SDG awareness and engagement).

The correlation analysis indicated that all three independent variables had a significant positive relationship with SDG awareness and engagement. Sustainable SDG practices exhibited the strongest correlation, followed by curriculum integration and information accessibility. The multiple linear regression results further confirmed that sustainable practices had a statistically significant and positive effect on SDG awareness and engagement, while curriculum integration had a positive but less pronounced effect. However, accessibility to SDG information, though correlated with awareness, showed mixed results, with some negative coefficients in the regression analysis, indicating possible challenges in information dissemination. The findings suggested that while SDG-related content and sustainability efforts were present in Kenyan universities, there were gaps in how information was accessed and utilized by university stakeholders.

Overall, the study findings underscored the need for a structured approach to embedding SDG education and sustainability practices within universities. Although many institutions had adopted SDG-related initiatives, challenges in information accessibility and the depth of curriculum integration persisted. The study concluded that universities must enhance their commitment to SDG implementation through policy reforms, improved resource allocation, and stronger institutional frameworks to support sustainability education and engagement. These findings contributed to ongoing discussions on the role of academia in SDG implementation and provided evidence-based recommendations for strengthening the impact of universities in advancing sustainable development.

5.3 Discussion of Findings

This section discussed the findings established by the study and compared them to previous literature.

5.3.1 Integration of SDG-Related Topics and Practices within Curricula

The study revealed that the integration of SDG-related topics and practices within university curricula had a positive but relatively moderate effect on SDG awareness and engagement. This finding suggested that while universities had incorporated SDG concepts into academic programs, the depth and effectiveness of this integration varied across institutions. This aligned with Lozano et al. (2022), who found that structured SDG-aligned curricula in European and U.S. universities enhanced student engagement in sustainability initiatives. However, the results of the current study suggested that Kenyan universities might still have been in the early stages of embedding SDG content comprehensively across different disciplines. Leal Filho et al. (2021) similarly noted that effective SDG curriculum integration depended on institutional support, faculty training, and a multidisciplinary approach, factors that might not yet have been fully developed in Kenya's higher education sector.

The findings contrasted with Mwangi and Mutua (2021), who found that SDG curriculum integration in Kenyan universities was largely inconsistent, with significant disparities between public and private institutions. Their study indicated that while some universities offered standalone courses on sustainability, the integration of SDG-related topics across disciplines remained minimal due to funding constraints and lack of faculty expertise. The current study suggested that while there had been progress in integrating SDG content, challenges in

implementation persisted, particularly regarding faculty preparedness and institutional commitment. Cheong et al. (2021) also emphasized the role of national policies in facilitating SDG education, with their study on Asian universities indicating that countries with structured policies on sustainability education tended to have higher levels of SDG integration in curricula.

These findings aligned with the Dynamic Capabilities Theory, which emphasizes an institution's ability to sense opportunities, seize them through timely action, and reconfigure internal structures to remain competitive and responsive in changing environments (Teece, 2007). In the context of sustainability education, universities must develop dynamic capabilities to integrate SDG principles effectively. The moderate impact observed in this study suggested that while Kenyan universities had begun to recognize the relevance of sustainability in education, many were yet to fully seize and reconfigure their curricula to reflect a comprehensive sustainability agenda. According to Farnese et al. (2019), institutions that lack the ability to restructure their educational programs in alignment with sustainability demands may struggle to embed these global goals meaningfully. Thus, the variability in curriculum integration across institutions reflected differing capacities to adapt dynamically to sustainability imperatives.

Overall, the findings indicated that while Kenyan universities had taken steps to incorporate SDG-related topics into their curricula, further efforts were needed to enhance the depth and consistency of this integration. Universities needed to invest in faculty training, interdisciplinary course development, and policy-driven curriculum reforms to ensure that SDG concepts were effectively embedded in all academic programs. Strengthening institutional frameworks and aligning curricula with national sustainability policies would be crucial in fostering a more comprehensive and impactful approach to SDG education.

5.3.2 Effect of Information Accessibility on SDG Awareness and Engagement

The study findings showed that accessibility to SDG-related information had a significant relationship with SDG awareness and engagement, but the regression analysis revealed mixed results, with some negative coefficients indicating possible challenges in information dissemination. This suggested that while access to SDG-related information was crucial, factors such as information overload, inconsistent messaging, or lack of structured dissemination strategies might have hindered its effectiveness. This finding aligned with Biberhofer et al. (2020), who found that European universities with well-developed digital resources and SDG portals had

higher levels of student engagement in sustainability projects. However, their study also noted that simply providing access to information was insufficient unless accompanied by effective communication strategies and interactive learning opportunities.

Similarly, Nhamo et al. (2020) found that African universities faced disparities in access to digital SDG resources, particularly in rural institutions where inadequate ICT infrastructure limited students' ability to engage with sustainability content. Their study highlighted that universities with limited digital access often struggled to integrate SDG knowledge effectively, leading to lower levels of awareness and engagement. The current study reinforced this by indicating that while information accessibility was a key determinant of SDG awareness, its effectiveness depended on how well the information was structured, communicated, and utilized by university stakeholders. Adeoye et al. (2021) also emphasized the role of digital literacy in SDG engagement, arguing that access to information must be complemented by training programs that enhanced students' ability to interpret and apply sustainability concepts in real-world contexts.

This outcome reinforced the Knowledge-Based Theory of the Firm, which asserts that knowledge is a critical organizational asset and must be effectively managed to generate innovation and sustained competitive advantage (Grant, 1996; Choi & Lee, 2003). The theory highlights the role of structured systems in storing, sharing, and applying knowledge, all of which are vital to fostering sustainability literacy. In this study, the mixed outcomes regarding information accessibility reflected limitations in how SDG-related knowledge was organized and disseminated across campuses. Universities with fragmented or poorly structured information systems may not have been able to leverage the full benefits of available knowledge, despite its presence. Cerchione and Esposito (2017) argue that without proper knowledge management infrastructure, access alone does not guarantee improved organizational performance or awareness outcomes. This insight supports the recommendation that institutions must enhance not only access to SDG information but also how that knowledge is curated, shared, and translated into actionable understanding among students and staff.

These findings suggested that while increasing access to SDG-related information was necessary, universities must also focus on enhancing information delivery methods. Providing structured digital repositories, integrating SDG content into interactive platforms, and promoting active discussions on sustainability issues could improve engagement. Universities should also address

barriers such as inconsistent internet connectivity, lack of standardized SDG communication strategies, and limited faculty involvement in SDG information dissemination. By refining information accessibility strategies, universities could ensure that SDG awareness translated into meaningful engagement and action.

5.3.3 Sustainable Practices in Universities Supporting SDG Implementation

The study found that sustainable SDG practices had the most significant influence on SDG awareness and engagement, highlighting the importance of practical sustainability initiatives in reinforcing theoretical knowledge. This finding aligned with Sachs et al. (2022), who found that universities with active sustainability programs, such as recycling initiatives, renewable energy projects, and green campus policies, reported higher levels of student involvement in SDG-related activities. Their study emphasized that experiential learning through campus sustainability practices played a crucial role in shaping students' attitudes and behaviours towards sustainability. The strong correlation found in the current study suggested that direct exposure to sustainability practices enhanced SDG awareness more effectively than theoretical knowledge alone.

Cheong and Park (2022) also found that universities with dedicated sustainability offices and structured sustainability policies achieved better outcomes in SDG implementation. Their study on Asian universities revealed that institutions with clear sustainability goals, faculty-led green initiatives, and student participation programs were more successful in fostering a culture of environmental responsibility. This aligned with the findings of the current study, which indicated that Kenyan universities with established sustainability programs tended to have higher levels of SDG awareness and engagement. However, the results also highlighted disparities in implementation, with some universities struggling to sustain long-term green initiatives due to funding constraints and lack of institutional commitment.

These results strongly reflected the principles of the Knowledge Gap Theory, which posits that individuals with greater access to information and enabling environments tend to acquire knowledge more rapidly than those with limited access, leading to disparities in awareness and engagement (Tichenor, Donohue, & Olien, 1970). In the context of this study, universities that actively implemented visible and structured sustainability practices created high-exposure environments where students and faculty were more likely to engage with SDG themes experientially. Conversely, institutions with minimal green initiatives contributed to information

and experience gaps that hindered widespread SDG awareness. Omisore et al. (2017) support this view, noting that unequal access to sustainability initiatives across academic institutions reinforces disparities in both knowledge and behaviour. Thus, addressing sustainability from an institutional practice perspective not only raises visibility but also narrows the knowledge gap, making SDG engagement more inclusive and effective across diverse university populations.

Overall, the findings suggested that enhancing sustainable practices within universities could significantly improve SDG awareness and engagement. Institutions should have prioritized integrating sustainability initiatives into campus operations, fostering student involvement in environmental projects, and aligning sustainability goals with academic programs. Strengthening partnerships with external stakeholders, securing funding for sustainability programs, and institutionalizing green policies could have further enhanced universities' role in SDG implementation. By embedding sustainability into the daily experiences of students and faculty, universities could have created a culture of environmental responsibility that extended beyond the classroom.

5.4 Conclusion

The study concluded that the integration of SDG-related topics and practices within university curricula had a moderate impact on SDG awareness and engagement. While universities had incorporated sustainability concepts into their academic programs, the depth and effectiveness of this integration varied, leading to inconsistent levels of SDG knowledge among students, faculty, and staff. Although the study confirmed a positive link between curriculum integration and SDG engagement, literature shows that its effectiveness often depends on institutional commitment, faculty expertise, and interdisciplinary collaboration (Biberhofer & Rieckmann, 2018; Tilbury & Ryan, 2020). Therefore, universities needed to refine their curriculum design to embed sustainability education more holistically across different academic disciplines to ensure comprehensive engagement with SDG-related content.

The study further concluded that accessibility to information played a significant role in SDG awareness and engagement. However, regression results indicated mixed effects, suggesting that while SDG information was available, its accessibility and delivery mechanisms might not have been optimally structured to enhance engagement. This finding implied that students, faculty, and administrators might not always have had consistent or structured access to SDG-related materials,

limiting their ability to fully engage with sustainability initiatives. The study established that while digital platforms, workshops, and seminars were avenues for SDG dissemination, their effectiveness depended on factors such as university policies, digital infrastructure, and faculty involvement in SDG-related communication.

The study also concluded that sustainable SDG practices within universities had the strongest positive effect on SDG awareness and engagement. Universities that actively implemented sustainability programs, such as energy-saving measures, waste reduction strategies, and green campus initiatives, demonstrated higher levels of SDG engagement among their communities. This finding underscored the importance of experiential learning, where exposure to real-world sustainability initiatives enhanced theoretical understanding. The results indicated that universities that integrated practical sustainability initiatives into their operational frameworks created a culture of environmental responsibility, significantly influencing SDG awareness and behavioural change among students and staff.

Lastly, the study findings confirmed that sustainable SDG practices had the strongest positive effect on SDG awareness and engagement, while curriculum integration had a moderate but significant effect, and accessibility to SDG information had a mixed influence. These results highlighted the need for structured policies to enhance the integration of SDG education, improve access to sustainability-related resources, and institutionalize sustainable campus practices. Higher education regulatory bodies, such as the Commission for University Education (CUE), should establish policies that require universities to embed SDG-related topics into curricula and ensure standardized information dissemination strategies. The study further emphasized that university management must actively support sustainability initiatives through faculty training, student-led sustainability projects, and funding for SDG implementation. Given that sustainable practices had the strongest impact on SDG engagement, universities should focus on creating experiential learning opportunities such as sustainability-driven community projects, campus-wide green policies, and environmental awareness programs. For students, engagement in SDG initiatives should be integrated into their academic experience to ensure practical application beyond theoretical learning. These policy contributions emphasize that a collaborative approach among policymakers, universities, and students is crucial for fostering a culture of sustainability in Kenya's higher education sector.

5.5 Recommendations

Based on the conclusion that the integration of SDG-related topics and practices within curricula had a moderate impact on SDG awareness and engagement, the study recommended that universities should have enhanced interdisciplinary collaboration to integrate SDG concepts more comprehensively across all academic disciplines. Faculty training programs should have been developed to equip educators with the necessary knowledge and teaching strategies to effectively deliver sustainability education. Additionally, institutions should have introduced mandatory SDG-focused courses to ensure that all students were exposed to sustainability principles, regardless of their academic discipline.

Given the finding that accessibility to information significantly affected SDG awareness and engagement, the study recommended that universities should have established structured digital platforms, such as SDG-specific portals, to centralize access to sustainability-related resources. Universities should have also enhanced the effectiveness of SDG communication through structured workshops, conferences, and interactive sessions to ensure consistent dissemination of information. Additionally, institutions should have leveraged digital innovations, such as mobile applications and social media campaigns, to increase awareness and engagement with SDG-related initiatives among students and faculty.

The study also recommended that universities should have expanded their sustainable SDG practices to enhance awareness and engagement. Institutions should have institutionalized green policies, such as campus-wide waste management programs, renewable energy adoption, and sustainable procurement strategies. Universities should have actively involved students in sustainability initiatives through structured programs, research projects, and volunteer opportunities. Lastly, partnerships with government agencies, NGOs, and private sector stakeholders should have been strengthened to enhance the implementation of sustainable campus initiatives and ensure long-term impact.

Building on the policy contribution, the study recommended that university governing bodies and policymakers should formalize SDG integration by embedding sustainability education into national higher education frameworks. The positive impact of curriculum integration on SDG awareness suggests that universities should strengthen interdisciplinary collaboration and mandate SDG-focused courses across all disciplines. The mixed effects of information accessibility indicate

that universities need to develop structured SDG information hubs, create standardized communication channels, and enhance faculty engagement in sustainability discourse. Furthermore, the strong impact of sustainable practices on SDG awareness and engagement reinforced the need for universities to implement comprehensive sustainability policies including campus-wide initiatives such as waste reduction programs, renewable energy projects, and responsible procurement practices that aligned with multiple SDGs beyond just SDG 12. To support long-term sustainability efforts, universities should establish partnerships with government agencies, NGOs, and private sector stakeholders to secure funding and institutional support for SDG initiatives. Strengthening these frameworks will ensure that SDG engagement within Kenyan universities is not only policy-driven but also practical, measurable, and impactful.

5.6 Limitations of the Study

This study was limited by its reliance on self-reported data, which may have introduced subjectivity in assessing SDG awareness and engagement. While efforts were made to sample both public and private universities, the findings may not be fully generalizable across all institutions in Kenya. Additionally, the study focused specifically on SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), and SDG 12 (Responsible Consumption and Production), and did not explore the full spectrum of all 17 SDGs, which may have limited the broader applicability of the results.

5.7 Areas for Further Research

While this study examined the integration of SDG-related topics in curricula, accessibility to SDG information, and sustainable practices, future research could have explored the role of university governance structures and policies in shaping sustainability engagement. Additionally, comparative studies could have been conducted across different countries to assess best practices in SDG integration within higher education institutions. Further research could have also examined the long-term impact of sustainability education on students' career choices and community engagement post-graduation.

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APPENDICES

Appendix I: Millenium Development Goals (MDGs)

Goals	Objective	Target
1.	Eradicate extreme poverty and hunger	<ul style="list-style-type: none"> ● Reduce extreme poverty by half between 1990 and 2015 ● Achieve full and productive employment and decent work for ● Reduce hunger by half between 1990 and 2015
2.	Achieve universal primary education	<ul style="list-style-type: none"> ● Universal primary schooling everywhere for all-boys and girls be able to complete a full course by 2015,
		<ul style="list-style-type: none"> ●
3.	Promote gender equality and empower women	<ul style="list-style-type: none"> ● Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015 ● Equal girls' enrolment in primary school ● Women's share of paid employment ● Women's equal representation in national parliaments
4.	Reduce child mortality	<ul style="list-style-type: none"> ● Reduce mortality of under five-year-olds by two thirds between 1990 and 2015
5.	Improve maternal health	<ul style="list-style-type: none"> ● Reduce maternal mortality by three quarters between 1990 and 2015 ● Achieve, by 2015, universal access to reproductive health

6.	Combat HIV/AIDS, malaria and other diseases	<ul style="list-style-type: none"> ● Halt by 2015 and begin to reverse the spread of HIV/AIDS ● Halt by 2015 and being reverse the spread of tuberculosis ● Achieve, by 2010, universal access to treatment for HIV/AIDS for all who need it ● Halted by 2015 and commenced to reverse the occurrence of malaria and other main diseases
7.	Ensure environmental sustainability	<ul style="list-style-type: none"> ● Halve by 2015 proportion of population without improved drinking water ● Halve by 2015 proportion of population without sanitation ● By 2020, improve the lives of at least 100 million slum inhabitants ● Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss
8.	Develop a global partnership for development	<ul style="list-style-type: none"> ● Develop further an open, rule-based, predictable, non-discriminatory trading and financial system ● Includes a commitment to good governance, development and poverty reduction—both nationally and internationally ● Address the special needs of the least developed countries

Source: Researcher 2024

Appendix II: Sustainable Development Goals

SDG	Sustainable Development Goal	Indicator
SDG 1	No Poverty	1.1.1: Proportion of population below \$1.25/day
		1.2.1: Proportion of population below the national poverty line
		1.2.2: Proportion of men, women, and children living in poverty
		1.3.1: Proportion of population covered by social protection systems
		1.4.1: Proportion of population living in households with access to basic services
		1.4.2: Proportion of population living in slums, informal settlements or inadequate housing
SDG 2	Zero Hunger	2.1.1: Prevalence of undernourishment
		2.1.2: Prevalence of food insecurity based on the Food Insecurity Experience Scale (FIES)
		2.2.1: Prevalence of stunting among children under 5 years of age
		2.2.2: Prevalence of malnutrition (wasting and overweight)
		2.3.1: Volume of production per labour unit
		2.3.2: Volume of production per hectare
SDG 3	Good Health and Well-being	3.1.1: Maternal mortality ratio
		3.1.2: Proportion of births attended by skilled health personnel
		3.2.1: Under-5 mortality rate
		3.2.2: Neonatal mortality rate
		3.3.1: Number of new HIV infections per 1,000 uninfected population
		3.3.2: Prevalence of HIV among 15-49 year olds

SDG 4	Quality Education	4.1.1: Proportion of children achieving minimum proficiency in reading and mathematics
		4.2.1: Proportion of children under 5 years of age developmentally on track
		4.3.1: Participation rate of youth and adults in education and training
		4.4.1: Proportion of youth and adults with ICT skills
SDG 5	Gender Equality	5.1.1: Legal frameworks promoting equality and non-discrimination
		5.2.1: Proportion of women and girls subjected to violence
		5.3.1: Proportion of women married or in a union before age 15 and 18
		5.4.1: Proportion of time spent on unpaid domestic and care work
SDG 6	Clean Water and Sanitation	6.1.1: Proportion of population using safely managed drinking water services
		6.2.1: Proportion of population using safely managed sanitation services
		6.3.1: Proportion of wastewater safely treated
		6.4.1: Change in water-use efficiency over time
SDG 7	Affordable and Clean Energy	7.1.1: Proportion of population with access to electricity
		7.1.2: Proportion of population with reliance on clean cooking fuels
		7.2.1: Renewable energy share in the total final energy consumption
		7.3.1: Energy intensity measured in terms of primary energy and GDP

SDG 8	Decent Work and Economic Growth	8.1.1: Annual growth rate of real GDP per capita
		8.2.1: Annual growth rate of real GDP per employed person
		8.3.1: Proportion of informal employment in non-agriculture employment
		8.4.1: Material footprint per capita
SDG 9	Industry, Innovation, and Infrastructure	9.1.1: Proportion of the rural population with access to an all-season road
		9.2.1: Manufacturing value added as a proportion of GDP
		9.3.1: Proportion of small-scale industries in total industry value added
		9.4.1: CO2 emission per unit of value added
SDG 10	Reduced Inequalities	10.1.1: Growth rates of household expenditure or income among the bottom 40%
		10.2.1: Proportion of people below 50% of median income
		10.3.1: Proportion of the population reporting discrimination or harassment
		10.4.1: Labour share of GDP
SDG 11	Sustainable Cities and Communities	11.1.1: Proportion of urban population living in slums
		11.2.1: Proportion of population with access to public transport
		11.3.1: Ratio of land consumption rate to population growth rate
		11.4.1: Expenditure on cultural and natural heritage

SDG 12	Responsible Consumption and Production	12.1.1: Number of countries with sustainable consumption and production action plans
		12.2.1: Material footprint per capita
		12.3.1: Global food loss index
		12.4.1: Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals
SDG 13	Climate Action	13.1.1: Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
		13.2.1: Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production.
		13.3.1: Number of countries that have integrated mitigation, adaptation, impact reduction, and early warning into primary, secondary, and tertiary curricula
SDG 14	Life Below Water	14.1.1: Index of coastal eutrophication and floating plastic debris density
		14.2.1: Proportion of national exclusive economic zones managed using ecosystem-based approaches
		14.3.1: Average marine acidity (pH) measured at agreed suite of representative sampling stations
		14.4.1: Proportion of fish stocks within biologically sustainable levels

SDG 15	Life on Land	15.1.1: Forest area as a proportion of total land area
		15.1.2: Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
		15.2.1: Progress towards sustainable forest management
		15.3.1: Proportion of land that is degraded over total land area
SDG 16	Peace, Justice, and Strong Institutions	16.1.1: Number of victims of intentional homicide per 100,000 population, by sex and age
		16.2.1: Proportion of children aged 1–17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month
		16.3.1: Proportion of victims of violence in the previous 12 months who reported their victimization to competent authorities or other officially recognized conflict resolution mechanisms
SDG 17	Partnerships for the Goals	17.1.1: Total government revenue as a proportion of GDP, by source
		17.2.1: Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee donors' gross national income (GNI)
		17.3.1: Foreign direct investments (FDI), official development assistance, and South-South Cooperation as a proportion of total domestic budget
		17.4.1: Debt service as a proportion of exports of goods and services

		17.5.1: Number of countries that adopt and implement investment promotion regimes for least developed countries
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Source: Researcher 2024



Appendix III: Questionnaire: Assessment of Awareness, Knowledge and Engagement with SDGs in Kenyan University Communities

SECTION A: DEMOGRAPHIC INFORMATION

1. **Gender:**

- Male
- Female
- Prefer not to say

2. **Age Group:**

- 18-24
- 25-34
- 35-44
- 45 and above

3. **University Type:**

- Public
- Private

4. **Education Level:**

- Certificate/Diploma
- Bachelors
- Masters
- PhD

5. **Position in the University:**

- Student
- Faculty
- Administrative Staff



SECTION B: AWARENESS OF SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Dependent Variable (SDG Awareness and Engagement)

6. **How familiar are you with the United Nations Sustainable Development Goals (SDGs)?**

- Very familiar
- Somewhat familiar
- Heard of them, but not familiar
- Not familiar at all

7. How often do you come across information about the SDGs in your daily activities at the university?

- Frequently
- Occasionally
- Rarely
- Never

8. Please rate your level of awareness for each of the 17 Sustainable Development Goals (SDGs) by selecting the option that best represents your knowledge: (Not aware at all: "I have never heard of this SDG. "Slightly aware: "I have heard of this SDG but know very little. "Moderately aware: "I have a basic understanding of this SDG. Very aware: "I am well-informed about this SDG. "Extremely aware: "I have in-depth knowledge and expertise on this SDG."

Sustainable Development Goal (SDG)	Not aware at all	Slightly aware	Moderately aware	Very aware	Extremely aware
1. No Poverty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Zero Hunger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Good Health and Well-being	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Quality Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Gender Equality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Clean Water and Sanitation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Affordable and Clean Energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Decent Work and Economic Growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Industry, Innovation, and Infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Reduced Inequalities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Sustainable Cities and Communities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Responsible Consumption and Production	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Climate Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Life Below Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Life on Land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Peace, Justice, and Strong Institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Partnerships for the Goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SECTION C: INTEGRATION OF SDG-RELATED TOPICS AND PRACTICES IN CURRICULA

10. How would you rate your understanding of the goals, targets, and indicators associated with the SDGs?

- Excellent
- Good
- Fair
- Poor
- No understanding

11. Which SDG-related activities have you participated in at your university? (Select all that apply)

- SDG-focused course/module
- University-organized workshops or seminars
- Student-led initiatives or clubs
- Volunteer programs
- Other (Please specify)

12. Do you think the university does enough to promote awareness and understanding of the SDGs among the university community?

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree


13. In your opinion, how can your university improve its efforts to raise awareness and knowledge of the SDGs?

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SECTION D: ACCESSIBILITY TO INFORMATION ON SDGs

14. Where did you first hear about the SDGs? (Select all that apply)

Sustainable Development Goal (SDG)	Where You heard about if first
1. No Poverty	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
2. Zero Hunger	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____

3. Good Health and Well-being	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
4. Quality Education	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
5. Gender Equality	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
6. Clean Water and Sanitation	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
7. Affordable and Clean Energy	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
8. Decent Work and Economic Growth	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
9. Industry, Innovation, and Infrastructure	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
10. Reduced Inequalities	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
11. Sustainable Cities and Communities	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
12. Responsible Consumption and Production	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
13. Climate Action	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
14. Life Below Water	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
15. Life on Land	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____

16. Peace, Justice, and Strong Institutions	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____
17. Partnerships for the Goals	<input type="checkbox"/> social media <input type="checkbox"/> News <input type="checkbox"/> Education <input type="checkbox"/> NGO <input type="checkbox"/> <input type="checkbox"/> Government <input type="checkbox"/> Friends/Family <input type="checkbox"/> Other: _____

15. There is readily available information on SDGs within the university.

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

16. How effective are workshops, conferences, and seminars organized by the university in disseminating information about SDGs?

- Very effective
- Effective
- Neutral
- Ineffective
- Very ineffective

17. How would you like to be accessing information about SDGs?

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SECTION E: SUSTAINABLE PRACTICES IN UNIVERSITIES SUPPORTING SDG IMPLEMENTATION

18. How effective do you think the integration of SDGs in the curriculum has been?

- Very effective

- Effective
- Neutral
- Ineffective
- Very ineffective

19. Do you think learning about SDGs has influenced your behaviour or perspective towards sustainability?

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

20. How often do you talk about environmental sustainability with friends and family?

- Always
- Frequently
- Occasionally
- Rarely
- Never

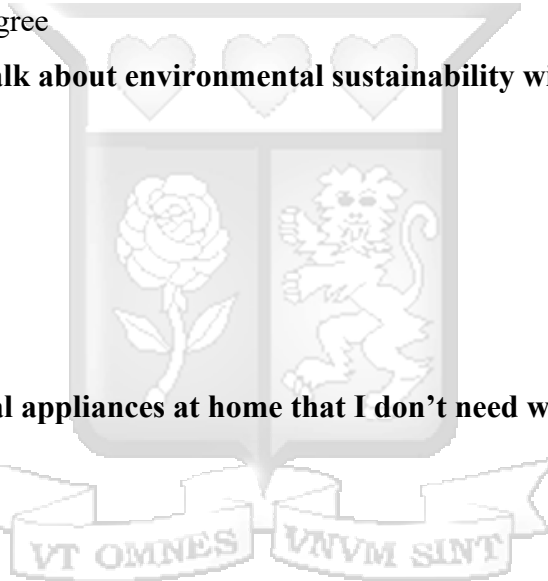
21. I switch off electrical appliances at home that I don't need when I am not around.

- Always
- Frequently
- Occasionally
- Rarely
- Never

22. I try to reduce waste at home by collecting materials that can be recycled.

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

23. I turn off the lights of the classroom/office after the class finishes or the room gets empty.



- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

24. I read documents on-screen rather than printing them out

- Always
- Frequently
- Occasionally
- Rarely
- Never

25. How has learning about SDGs influenced your behaviour or perspective?

.....

.....

.....

.....

26. What additional comments or suggestions do you have regarding sustainable SDG practices at the university?

.....

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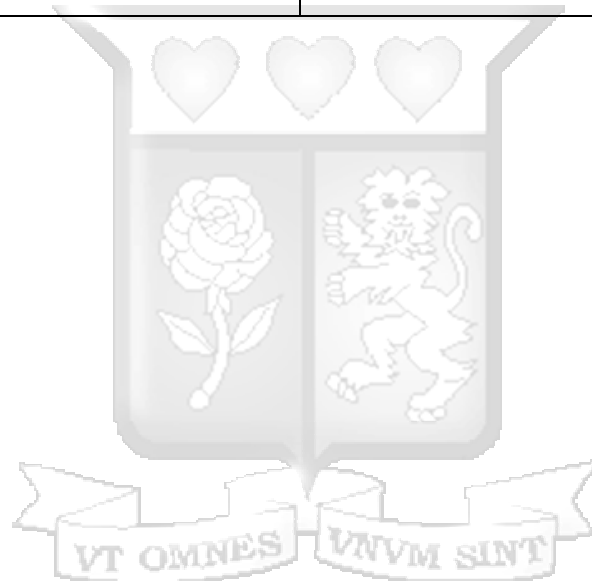
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.....

THANK YOU

Appendix IV: Budget

ACTIVITY	COST (KSHS.)
Printing services	20,000
Logistical	15,000
NACOSTI charges	5,000
Internet services	5,000
Binding	5,000
Miscellaneous	5,000
Stationery	5,000
TOTAL	60,000



Appendix V: SU Ethical Review



27th November 2024

Mr Mwai John,
jomwaka09@gmail.com

Dear Mr Mwai,

RE: An Assessment of Universities' Contributions to Sustainable Development Goals (SDGs) Implementation in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2472/24**. The approval period is from **27th November 2024 to 26th November 2025**.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
- v. Clearance for the export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.


Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke/> and obtain other clearances needed.


Yours sincerely,

A handwritten signature in black ink, appearing to read "Ambrose Rachier".

**Mr Ambrose Rachier,
Chairperson; SU-ISERC**


Appendix VI: NACOSTI Approval


REPUBLIC OF KENYA


NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION

Ref No: **356996** Date of Issue: **17/December/2024**

RESEARCH LICENSE




This is to Certify that Mr.. John Mwai of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: "An Assessment of Universities' Contributions to Sustainable Development Goals (SDGs) Implementation in Kenya " for the period ending ; 17/December/2025.

License No: **NACOSTI/P/24/414629**

356996
Applicant Identification Number

Walter Muriuki
Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION

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