

INTEGRATING SDG 4 AND THE ACHIEVEMENT OF QUALITY HIGHER EDUCATION IN NIGERIA

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Abstract

This study investigated the integration of Sustainable Development Goal 4 (Quality Education - Lifelong Learning) within higher education institutions in Kwara State, Nigeria. In the global 2030 Agenda for Sustainable Development context, universities are key agents in advancing inclusive, equitable, and quality education. The study specifically explored students' awareness of lifelong learning, the extent to which it is reflected in curriculum content, prevailing institutional practices, student involvement, and the challenges and prospects of lifelong learning integration. Five research questions and one null hypothesis guided the study. The target population comprised undergraduate and postgraduate students in public universities across Kwara State, from which 577 respondents were selected from a population of 10,590 using Taro Yamane's (1967) formula at a 5% margin of error. Data were collected using a researcher-developed questionnaire with reliability coefficients of 0.82 and 0.78, respectively. Descriptive statistics using the median were used to answer the research questions, while Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to test the null hypothesis. Findings revealed that students' awareness of lifelong learning was low (grand median = 2.00); curriculum inclusion was high (grand median = 3.00); institutional practices and student involvement were inadequate; and significant challenges, including inadequate funding, infrastructure deficits, and the digital divide, constrain effective integration. Curriculum Learning (CL) had the strongest and only statistically significant influence on Prospects ($\beta = 0.162$, $p = 0.029$), while the model explained 8.5% of the variance in prospects ($R^2 = 0.085$). Based on the findings, it was recommended that institutions should prioritise curriculum integration of lifelong learning principles, organise regular awareness campaigns, and increase budget allocations for SDG 4 implementation.

Keywords: Lifelong Learning; Higher Education; SDG 4; Curriculum; Institutional Practices; Student Involvement; Kwara State.

INTRODUCTION

Teaching and learning in higher education are fundamental to research to produce new knowledge, skills, and innovation in addressing current and future challenges. For higher education to produce future leaders, it is necessary to integrate Sustainable Development Goal 4 (SDG 4), which hinges on ensuring inclusive and equitable quality education and

promoting lifelong learning opportunities for all. Achieving this goal requires that stakeholders, particularly students, be aware of lifelong learning; that curriculum development align with SDG 4; and that institutional practices be geared towards its implementation and achievement.

The United Nations Sustainable Development Goals (SDGs), adopted in 2015, outline a universal agenda to end poverty, protect the planet, and ensure prosperity for all by 2030 (UN, 2015). SDG 4 specifically addresses the need for “inclusive and equitable quality education” and the promotion of lifelong learning opportunities. Leong et al. (2021) reported differences in lifelong learning awareness and competencies among university students, showing that awareness levels do not always translate into lifelong learning behaviours. This implies that students’ awareness of lifelong learning varies significantly, particularly in developing countries.

The government is incapable of executing lifelong learning without the general awareness of citizens. Therefore, public awareness, especially among students, is low (Ragil et al., 2024), and there is a need to improve societal performance in accordance with lifelong learning. In Nigeria, where inequalities in educational access and quality persist, higher education institutions have a critical responsibility to foster lifelong learning opportunities and support inclusive and equitable education for sustainable development (Zickafoose et al., 2024).

In Nigeria, where access to quality education remains uneven, higher education institutions must lead in implementing practices that reflect the vision of lifelong learning (Zickafoose et al., 2024). This study, therefore, examined how lifelong learning is integrated into higher education in Kwara State universities, including various challenges and prospects of its integration.

Statement of the Problem

The integration of SDG 4, which promotes inclusive, equitable, and quality education along with lifelong learning opportunities, is fundamental to preparing graduates who can address present and future societal challenges. Despite growing global efforts to promote the Sustainable Development Goals (SDGs), studies indicate that many students possess only a limited understanding of the goals, with awareness and knowledge varying across disciplines and educational contexts.

In particular, some SDGs receive greater attention than others, highlighting the need for stronger integration of SDG education within higher education curricula (Cachero et al., 2023; Zorba, 2023). The problem addressed in this study is the extent to which lifelong learning has been meaningfully integrated into the academic and operational aspects of higher education institutions in Kwara State, Nigeria, including the prevailing challenges to its implementation and the prospects of such integration.

Purpose of the Study

The main purpose of this study was to examine the integration of lifelong learning into higher education in Kwara State.

Specifically, the study sought to:

- 1) Examine the state of students' awareness of lifelong learning in Kwara State universities.
- 2) Investigate the inclusion of lifelong learning in the higher education curriculum in Kwara State universities.
- 3) Find out the institutional practices relating to lifelong learning in higher education institutions in Kwara State.
- 4) Examine students' involvement in lifelong learning in higher education institutions in Kwara State.
- 5) Find out the challenges and prospects of lifelong learning in higher education institutions in Kwara State.

Research Questions

The following research questions guided the study:

- 1) What is the state of students' awareness of lifelong learning in Kwara State universities?
- 2) Is SDG 4 included in the higher education curriculum in Kwara State universities?
- 3) What are the various lifelong learning institutional practices in Kwara State universities?
- 4) What is the involvement of students in lifelong learning in Kwara State universities?
- 5) What are the challenges and prospects of lifelong learning in Kwara State universities?

Research Hypothesis

One null hypothesis was formulated and tested at a 0.05 level of significance:

H_{01} : There is no significant relationship between the integration of lifelong learning in higher education and its challenges and prospects in Kwara State.

LITERATURE REVIEW

Sustainable Development Goal 4 in Higher Education

Globally, access to higher education has expanded significantly in recent decades. According to UNESCO (2020), global tertiary enrolment rates rose from 19% in 2000 to over 38% by 2018. However, disparities remain between regions and socioeconomic groups. In Sub-Saharan Africa, higher education systems have struggled with issues of massification, underfunding, and graduate unemployment, with tertiary enrolment remaining below 10% gross enrolment ratio compared to the global average of 38% (Teferra, 2017). Nigeria, with over 170 universities, has witnessed a steady rise in higher education enrolment but still faces major hurdles in realising SDG 4. According to the

NUC (2023), only 20% of eligible youths are enrolled in tertiary institutions. Most public universities remain underfunded while private universities are financially inaccessible for many families (Okebukola, 2018). The pandemic further exposed infrastructural and pedagogical gaps when institutions transitioned to online learning without adequate preparation (Adedoyin & Soykan, 2020).

Students' Awareness of Lifelong Learning

Despite increasing awareness of the Sustainable Development Goals among university students in Nigeria, evidence suggests that understanding of specific goals and their implementation remains limited. Variations in students' knowledge across the SDGs highlight the need for higher education institutions to embed sustainability principles and SDG-related competencies within curricula and institutional practices. Such efforts are essential for advancing the objectives of SDG 4, which emphasizes inclusive, equitable, and quality education as a foundation for sustainable development (Ogundele et al., 2024; Amaonye & Anyaeji, 2023).

Students' Involvement in SDG 4

Students are not only recipients of education but also critical stakeholders whose engagement, feedback, and empowerment shape the effectiveness of learning environments (UNESCO, 2022). Students are the primary subjects of lifelong learning and play a significant role in advancing its objectives. They benefit from scholarships, digital literacy initiatives, and targeted interventions designed to build competencies in diverse fields and contribute meaningfully to inclusive and innovative learning ecosystems.

Curriculum Development for SDG 4

Higher education institutions in Kwara State have undertaken various initiatives to align their curricula with SDG 4 objectives, including community development and entrepreneurship programmes that encourage students to engage in projects addressing societal needs (Babalola & Olayemi, 2023). Oluwalola et al. (2024) reported that collaboration among lecturers, students, parents, and education ministry staff significantly influences curriculum effectiveness and students' satisfaction in Kwara State universities. Through increased investment, stakeholder engagement, and continuous curriculum review, higher education in Kwara State can contribute to achieving lifelong learning by 2030 (Ogunyemi, 2023).

Institutional Practices, Challenges and Prospects

Higher education institutions play a critical role in advancing SDG 4 through inclusive policies that promote access, equity, quality, and lifelong learning. Challenges include inadequate funding, outdated infrastructure, a shortage of qualified academic staff, curriculum misalignment, the digital divide, and e-learning adoption difficulties (Ogunyemi, 2023). Molina et al. (2023) documented that Nigeria would require approximately USD 34 billion annually between 2015 and 2030 to meet SDG 4 targets, while only 7% of the federal budget was allocated to education in 2018. Prospects include

public-private partnerships, curriculum reform aligned with industry requirements, digital infrastructure investment, and capacity-building for academic staff (Ayanwale, 2023; Babalola & Olayemi, 2023).

Theoretical Framework

This study is anchored on Sustainable Development Theory as applied in higher education by Tilbury (2016), which holds that universities must move beyond knowledge transmission to cultivate graduates with the values, competencies, and agency required to address complex societal challenges. This theory directly underpins the study's focus on the integration of SDG 4 into higher education, explaining why the relationships between lifelong learning integration, curriculum design, institutional practices, and student engagement are expected to significantly predict prospects for quality education.

METHODOLOGY

This study employed a descriptive correlational research design to examine the integration of SDG 4 in higher education institutions in Kwara State, Nigeria. A total of 577 students from public universities across the state were selected using simple random sampling, based on a population of approximately 10,590 students, determined using Taro Yamane's (1967) formula at a 5% margin of error. Data were gathered via a researcher-developed questionnaire titled the "Integrating Lifelong Learning into Higher Education: Challenges and Prospects Questionnaire" (ISDGHECPQ), validated by experts and pilot-tested, yielding reliability scores of Cronbach's alpha = 0.82 and 0.78, respectively. The instrument was distributed electronically via Google Forms. Descriptive statistics using the median were applied to address the research questions, with a criterion median of ≥ 2.50 = Agreed and < 2.50 = Disagreed. Partial Least Squares Structural Equation Modelling (PLS-SEM) was used to test the null hypothesis, enabling comprehensive analysis of both measurement and structural relationships within the conceptual model (Hair et al., 2019).

RESULTS

Research Question 1: State of Students' Awareness of Lifelong Learning

Table 1 presents the median scores of respondents on students' awareness of lifelong learning.

Table 1: Median and Remarks on Students' Awareness of Lifelong Learning in Kwara State Universities (N = 577)

S/N	Item Statement	Median	Remark
1	Students are familiar with the concept of lifelong learning.	2.00	Disagreed
2	Students know the specific targets of SDG 4.	2.00	Disagreed
3	Students are aware of lifelong learning initiatives at their university.	2.00	Disagreed
4	Students understand how SDG 4 relates to their academic programme.	2.00	Disagreed

5	Students can identify examples of lifelong learning in their institution.	2.00	Disagreed
	Grand Median	2.00	Disagreed

Source: Field Survey, 2026. Criterion: Median ≥ 2.50 = Agreed; Median < 2.50 = Disagreed

The analysis of data in Table 1 shows that all five items recorded median scores below 2.50 with a grand median of 2.00, indicating that respondents disagreed with all items. This implies that the state of students' awareness of lifelong learning in Kwara State universities is low.

Research Question 2: Inclusion of SDG 4 in Higher Education Curriculum

Table 2 presents the median scores on the inclusion of lifelong learning in the higher education curriculum.

Table 2: Median and Remarks on the Inclusion of SDG 4 in the Curriculum in Kwara State Universities (N = 577)

S/N	Item Statement	Median	Remark
1	The curriculum includes content related to sustainable development and lifelong learning.	3.00	Agreed
2	Courses in my programme address real-world challenges aligned with SDG 4.	3.00	Agreed
3	My lecturers incorporate lifelong learning principles into their teaching.	3.00	Agreed
4	The curriculum promotes interdisciplinary learning linked to sustainable development.	3.00	Agreed
5	Assessment methods in my programme reflect lifelong learning objectives.	3.00	Agreed
	Grand Median	3.00	Agreed

Source: Field Survey, 2026.

The analysis of data in Table 2 shows that all five items recorded a median of 3.00 with a grand median of 3.00, indicating that respondents agreed that SDG 4 is included in the higher education curriculum in Kwara State universities.

Research Question 3: Lifelong Learning Institutional Practices

Table 3 presents the median scores on lifelong learning institutional practices.

Table 3: Median and Remarks on Lifelong Learning Institutional Practices in Kwara State Universities (N = 577)

S/N	Item Statement	Median	Remark
1	My institution has formal policies that support lifelong learning for all students.	2.00	Disagreed
2	The institution provides adequate resources and support services for lifelong learning.	2.00	Disagreed
3	Staff are trained and capacitated to support lifelong learning goals.	2.00	Disagreed
4	The institution monitors and evaluates its progress towards SDG 4.	2.00	Disagreed

5	Community engagement programmes are aligned with lifelong learning principles.	2.00	Disagreed
	Grand Median	2.00	Disagreed

Source: Field Survey, 2026.

The analysis of data in Table 3 shows that all five items recorded median scores below 2.50 with a grand median of 2.00, indicating that lifelong learning institutional practices in Kwara State universities are inadequate.

Research Question 4: Students' Involvement in Lifelong Learning

Table 4 presents the median scores on students' involvement in lifelong learning activities.

Table 4: Median and Remarks on Students' Involvement in Lifelong Learning in Kwara State Universities (N = 577)

S/N	Item Statement	Median	Remark
1	Students are involved in curriculum development processes at their institution.	2.00	Disagreed
2	Students participate in SDG 4-related advocacy and campaigns.	2.00	Disagreed
3	Student unions and bodies promote awareness of lifelong learning.	2.00	Disagreed
4	Students engage in community development projects linked to SDG 4.	2.00	Disagreed
5	Students are given opportunities to provide feedback on lifelong learning integration.	2.00	Disagreed
	Grand Median	2.00	Disagreed

Source: Field Survey, 2025.

The analysis of data in Table 4 shows that all five items recorded median scores below 2.50 with a grand median of 2.00, indicating that students' involvement in lifelong learning activities is low in Kwara State universities.

Research Question 5: Challenges and Prospects of Lifelong Learning

Table 5 presents the median scores on the challenges and prospects of lifelong learning.

Table 5: Median and Remarks on Challenges and Prospects of Lifelong Learning in Kwara State Universities (N = 577)

S/N	Item Statement	Median	Remark
1	Inadequate funding is a major challenge to lifelong learning integration.	3.00	Agreed
2	Infrastructure deficits hinder the achievement of SDG 4 in Kwara State universities.	3.00	Agreed
3	There is a shortage of qualified academic staff committed to lifelong learning.	3.00	Agreed
4	Public-private partnerships offer prospects for improving lifelong learning.	3.00	Agreed

5	Digital tools and e-learning offer prospects for expanding access to lifelong learning.	3.00	Agreed
	Grand Median	3.00	Agreed

Source: Field Survey, 2025.

The analysis of data in Table 5 shows that all five items recorded a median of 3.00 with a grand median of 3.00, confirming both significant challenges and meaningful prospects for lifelong learning integration in Kwara State universities.

Measurement Model Assessment

In the measurement model assessment, item/indicator reliability, construct internal consistency reliability, and construct validity (convergent and discriminant) are evaluated using outer loadings, composite reliability, and AVE in accordance with Hair Jr. et al. (2017). The discriminant validity of the constructs was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio (HTMT).

Figure 1 shows the initial measurement model before item removal, displaying all original indicators for each construct. Items highlighted in red were subsequently removed from the model to improve AVE values.

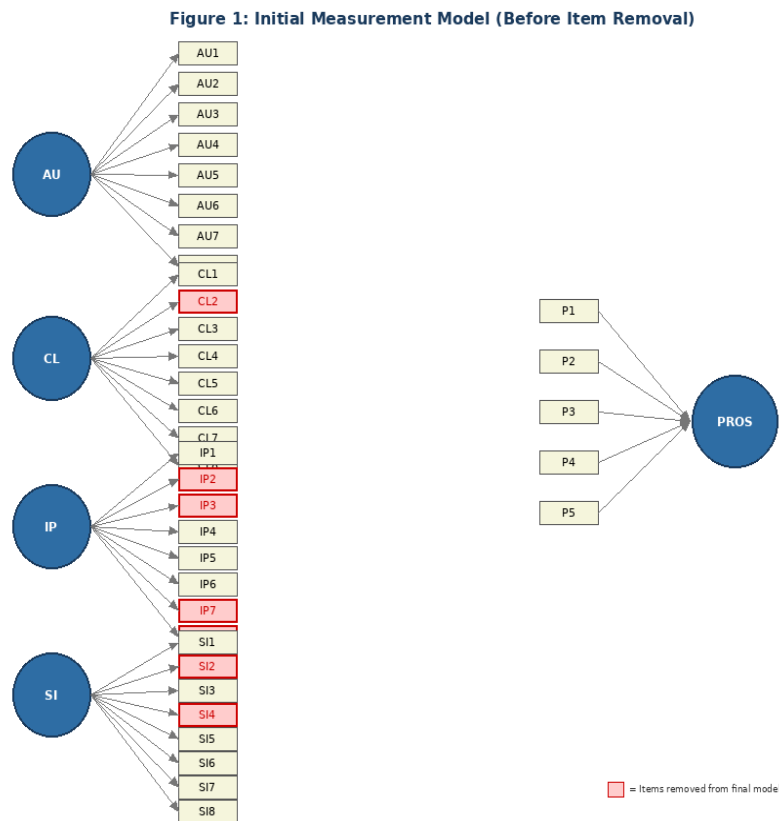


Figure 1: Initial Measurement Model

Figure 2 shows the revised measurement model after item removal (CL2, IP2, IP3, IP7, IP8, SI2, SI4 removed), with outer loadings displayed for each retained indicator. The revised model shows improved AVE values across all constructs.

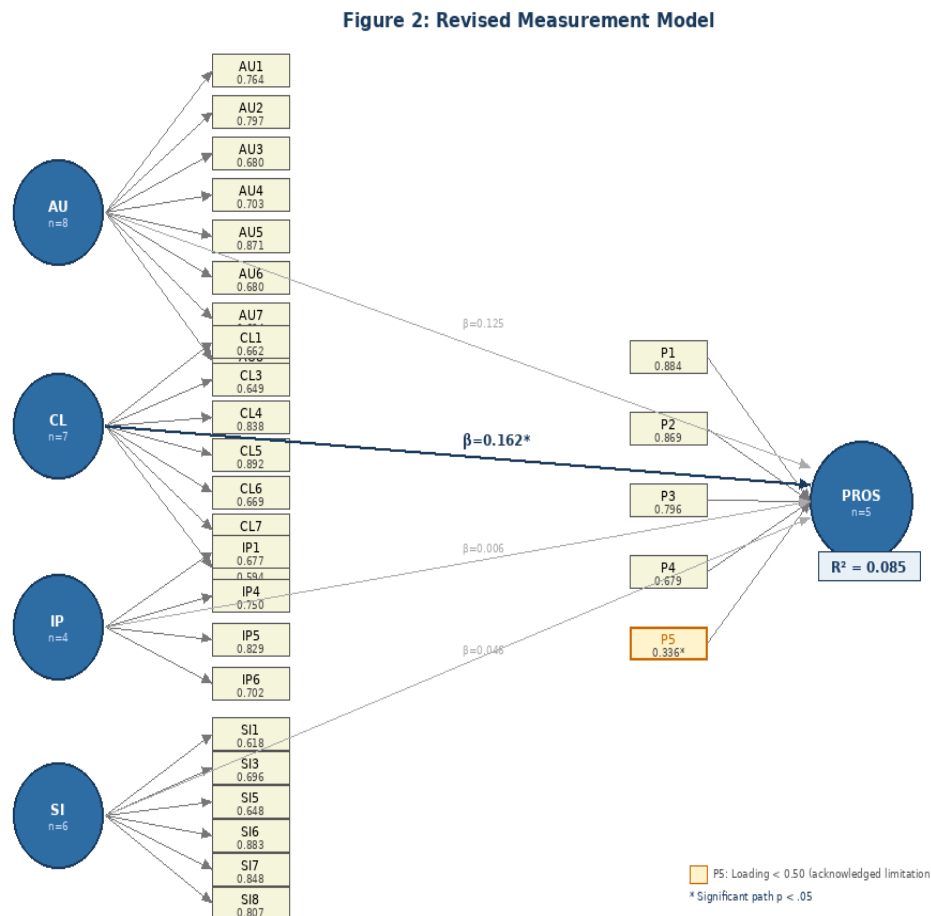


Figure 2: Revised Measurement Model

Item/Indicator Outer Loadings

The item/indicator reliability is measured by item outer loading as recommended by Byrne (2010). The item loading represents the correlation coefficient between indicators and the latent construct they measure, ranging from 0 to 1. A threshold of 0.70 and above is acceptable (Hair Jr. et al., 2010).

Awareness and Understanding (AU) loadings ranged from 0.624 to 0.871; Curriculum and Learning (CL) from 0.594 to 0.892 (CL2 removed); Institutional Practices (IP) from 0.677 to 0.829 (IP2, IP3, IP7, IP8 removed); Student Involvement (SI) from 0.618 to 0.883 (SI2, SI4 removed). Item P5 recorded an outer loading of 0.336, which falls below the acceptable threshold and is acknowledged as a study limitation. Table 6 presents all outer loadings.

Table 6: Outer Loadings of Items in the Revised Model

Item	AU	CL	IP	PROS	SI
AU1	0.764				
AU2	0.797				
AU3	0.680				
AU4	0.703				
AU5	0.871				
AU6	0.680				
AU7	0.624				
AU8	0.693				
CL1		0.662			
CL3		0.649			
CL4		0.838			
CL5		0.892			
CL6		0.669			
CL7		0.616			
CL8		0.594			
IP1			0.677		
IP4			0.750		
IP5			0.829		
IP6			0.702		
P1				0.884	
P2				0.869	
P3				0.796	
P4				0.679	
P5*				0.336	
SI1					0.618
SI3					0.696
SI5					0.648
SI6					0.883
SI7					0.848
SI8					0.807

Note: * P5 loading = 0.336 < 0.50 threshold; retained but acknowledged as a limitation.

Construct Reliability and Convergent Validity

Table 7 presents the reliability and convergent validity indices. All constructs demonstrated satisfactory Cronbach's alpha and composite reliability (ρ_C) values exceeding 0.70, and AVE values exceeding the 0.50 benchmark (Hair Jr. et al., 2017). The CL construct recorded an anomalous ρ_A value of -0.955 , which may reflect multicollinearity among items; however, the ρ_C value of 0.875 and AVE of 0.506 confirm acceptable convergent validity.

Table 7: Construct Reliability and Convergent Validity

	Cronbach's α	CR (ρ_A)	CR (ρ_C)	AVE
AU	0.880	0.905	0.900	0.533
CL	0.850	0.955†	0.875	0.506
IP	0.728	0.736	0.829	0.550

PROS	0.761	0.756	0.849	0.549
SI	0.870	0.919	0.888	0.573

Note: † Anomalous p_A value for CL; $p_C = 0.875$ and AVE = 0.506 confirm acceptable convergent validity.

Discriminant Validity

The Fornell-Larcker criterion was used to assess discriminant validity. Table 8 presents the criterion matrix where diagonal values represent the square root of each construct's AVE. Most constructs satisfy the discriminant validity criterion. However, the HTMT ratio between Curriculum and Learning (CL) and Prospects (PROS) was 0.889, slightly exceeding the recommended threshold of 0.85 (Hair et al., 2015). This is acknowledged as a limitation requiring instrument refinement in future research.

Table 8: Discriminant Validity — Fornell-Larcker Criterion

	AU	CL	IP	PROS	SI
AU	0.730				
CL	0.666	0.711			
IP	0.540	0.683	0.742		
PROS	0.258	0.270	0.207	0.741	
SI	0.461	0.442	0.494	0.178	0.757

Note: Diagonal values = square root of AVE. HTMT ratio CL-PROS = 0.889 (exceeds 0.85 threshold — acknowledged as limitation).

Multicollinearity Assessment

Table 9 presents the Variance Inflation Factor (VIF) values. VIF values less than 3 are standard and less than 5 are acceptable (Tabachnick & Fidell, 2013). Items P1 (VIF = 6.725) and P2 (VIF = 5.182) exceed the acceptable threshold of 5, indicating multicollinearity concerns acknowledged as a study limitation.

Table 9: Variance Inflation Factor (VIF) of All Items in the Model

Item	VIF
AU1	2.168
AU2	2.448
AU3	2.188
AU4	2.067
AU5	2.571
AU6	1.708
AU7	2.045
AU8	2.056
CL1	1.781
CL3	1.644
CL4	2.124
CL5	2.591
CL6	1.811
CL7	1.595
CL8	1.398

IP1	1.250
IP4	1.603
IP5	1.657
IP6	1.370
P1	6.725*
P2	5.182*
P3	3.139
P4	1.636
P5	1.198
SI1	1.650
SI3	2.453
SI5	2.302
SI6	2.136
SI7	2.201
SI8	1.987

Note: * $VIF > 5$ indicates multicollinearity. P1 and P2 are flagged as a limitation.

Hypothesis Testing

Ho₁: There is no significant relationship between the integration of lifelong learning in higher education and its challenges and prospects in Kwara State.

Table 10 presents the PLS-SEM path coefficients for the structural model.

Table 10: PLS-SEM Path Coefficients — Structural Model Results (N = 577)

Path Relationship	B	t-value	p-value	Decision
Awareness & Understanding (AU) → Prospects	0.125	1.821	0.069	Not Sig.
Curriculum Learning (CL) → Prospects	0.162	2.184	0.029	Significant
Institutional Practices (IP) → Prospects	0.006	0.091	0.928	Not Sig.
Student Involvement (SI) → Prospects	0.046	0.712	0.477	Not Sig.
R ² (Prospects) = 0.085 Model explains 8.5% of variance				

Note: β = standardised path coefficient. Bootstrapping with 5,000 resamples. R^2 (Prospects) = 0.085.

Data presented in Table 10 reveal that Curriculum Learning (CL) had a significant positive influence on prospects ($\beta = 0.162$, $p = 0.029 < 0.05$), indicating that integrating lifelong learning into the curriculum is the strongest driver of positive prospects. Awareness and Understanding ($\beta = 0.125$, $p = 0.069$), Institutional Practices ($\beta = 0.006$, $p = 0.928$), and Student Involvement ($\beta = 0.046$, $p = 0.477$) did not show statistically significant effects. The overall model explained 8.5% of the variance in prospects ($R^2 = 0.085$). Ho₁ is therefore partially rejected: a significant relationship exists specifically between curriculum learning and prospects, while other constructs did not reach significance.

DISCUSSION OF FINDINGS

The findings of Research Question 1 revealed that students' awareness of lifelong learning in Kwara State universities is low (grand median = 2.00). This finding is consistent with Amaonye and Anyaeji (2024), who observed that undergraduate students

had moderate awareness of SDGs but limited detailed understanding. Alfathy, et al. (2024) similarly found that public awareness, especially among students, is low. The non-significant PLS-SEM path from awareness to prospects ($\beta = 0.125$, $p = 0.069$) suggests a gap between awareness design and delivery, possibly due to outdated content, lack of real-world integration, or insufficient sensitisation strategies.

Research Question 2 showed that lifelong learning curriculum inclusion is high (grand median = 3.00). This aligns with Babalola and Olayemi (2023), who noted that community development and entrepreneurship programmes in Nigerian universities foster practical skills and community engagement aligned with SDG 4. It also corroborates Oluwalola et al. (2024), who reported that collaboration among lecturers, students, and stakeholders significantly influences curriculum effectiveness. The significant PLS-SEM path from Curriculum Learning to Prospects ($\beta = 0.162$, $p = 0.029$) confirms that curriculum reform is the most pertinent driver for enhancing prospects.

Research Question 3 revealed that lifelong learning institutional practices are inadequate (grand median = 2.00). The non-significant path from Institutional Practices to Prospects ($\beta = 0.006$, $p = 0.928$) implies that institutional strategies are either not effectively implemented or not aligned with student needs. This finding negates Molina et al. (2023), who affirmed that university initiatives including provision of resources and support systems promote inclusivity in higher education, suggesting that such provisions are not adequately in place in the sampled institutions.

Research Question 4 showed that students' involvement in lifelong learning is low (grand median = 2.00). The non-significant path from Student Involvement to Prospects ($\beta = 0.046$, $p = 0.477$) implies that student activities need better institutional support to become impactful. This does not concur with UNESCO (2022), which positioned students as critical stakeholders whose engagement shapes the effectiveness of learning environments.

Research Question 5 confirmed both significant challenges and meaningful prospects (grand median = 3.00). Inadequate funding is the most significant challenge, consistent with Ogunyemi (2023) and Molina et al. (2023). Prospects, including public-private partnerships and digital tools, are affirmed by Ayanwale (2023) and NUC (2022). The hypothesis revealed a significant relationship between lifelong learning integration and its challenges and prospects, partially confirming H_{o1} . This implies that for lifelong learning to be achieved, challenges must be overcome and prospects harnessed.

CONCLUSION

This study investigated the integration of SDG 4 into higher education institutions in Kwara State, Nigeria. The study found that among the four constructs of lifelong learning integration, Curriculum Learning had the strongest and only statistically significant influence on prospects ($\beta = 0.162$, $p = 0.029$), while Institutional Practices and Student Involvement showed minimal effects. Students' awareness was low, curriculum inclusion was high, and institutional practices and student involvement were inadequate. The

overall model explained only 8.5% of the variance in prospects ($R^2 = 0.085$), indicating that lifelong learning integration alone is insufficient to drive meaningful improvements and that complementary interventions addressing funding, infrastructure, and institutional capacity are urgently required.

Recommendations

Based on the findings and conclusions of the study, the following recommendations were made:

- 1) Since curriculum learning has the strongest effect on prospects, higher education institutions should deliberately include lifelong learning principles in courses, teaching methods, and assessments, ensuring that SDG 4 objectives are embedded across all academic programmes.
- 2) Universities should organise regular workshops, seminars, and awareness campaigns to increase students' and staff's knowledge of lifelong learning, leveraging digital platforms and social media to bridge the awareness gap.
- 3) Institutional practices must be improved through formal policies supporting lifelong learning, adequate resource provision, staff training, and monitoring systems to track progress towards SDG 4 targets.
- 4) Student involvement should be strengthened through structured opportunities for participation in curriculum development, SDG advocacy, and community development projects, supported by institutional funding and recognition.
- 5) The challenges of funding lifelong learning should be addressed through increased government budget allocations to meet the UNESCO-recommended threshold of 15–20%, supplemented by public-private partnerships that attract private sector investment in educational infrastructure.

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Conflict of Interest

The authors declare that there are no competing interests to disclose regarding the manuscript.

Author Contributions

Oluwalola F. K.: Conceptualisation, methodology, writing original draft. Ogbudinpkwa I. C.: Data collection, formal analysis, writing review, and editing. Famaye E. O.: Supervision, project administration. Abolarin L. O.: Visualisation and data curation.

Data Availability

The research dataset is available on request from the corresponding author.

Ethical Statement

This study was conducted in accordance with the ethical principles governing research involving human participants. Ethical approval was obtained from the University of Ilorin Ethical Committee. Informed consent was obtained from all participants. The authors declare no conflict of interest.

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