



University Governance, SDGs, and Quality of Life: A SEM

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Abstract: This study examines the role of university governance in enhancing the quality of life through the implementation of the Sustainable Development Goals (SDGs). The main objective is to analyze how institutional strategies, policies, and participatory governance structures within higher education contribute to sustainable well-being among students, staff, and surrounding communities. The methodology involves a mixed-methods approach, including a comparative case study of five universities across Latin America and Europe, semi-structured interviews with academic leaders, and a quantitative survey administered to over 800 university stakeholders. The results reveal that universities with integrative governance models—characterized by cross-sector collaboration, transparency, and inclusive decision-making—are more effective in aligning their operations with the SDGs and in fostering a higher perceived quality of life. Key factors include access to green infrastructure, mental health services, equitable participation, and curriculum innovation. The significance of this research lies in its contribution to understanding how governance practices can be leveraged to create sustainable academic ecosystems, offering a model for other institutions committed to the Agenda 2030. The findings also provide actionable recommendations for policy reforms and strategic planning in higher education governance.

Keywords: *Governance, Quality of life, Model, SEM, Adjust*

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I. INTRODUCTION

In recent decades, universities have emerged as key actors in the global pursuit of sustainable development. As knowledge hubs and centers of innovation, higher education institutions play a crucial role in implementing the Sustainable Development Goals (SDGs) established by the United Nations in 2015. These goals, comprising 17 interconnected objectives, aim to address global challenges such as poverty, inequality, environmental degradation, and access to quality education [1]. However, despite growing awareness of their importance, many universities face challenges in integrating SDG-related initiatives into institutional governance structures in a way that also promotes a high quality of life for their communities.

The main problem addressed in this study is the limited understanding of how university governance affects the quality of life within academic communities while implementing the SDGs. While various institutions have adopted sustainability strategies, there remains a gap in assessing their impact on stakeholders' well-being, particularly students, faculty, and local populations. Governance structures that are overly hierarchical or disconnected from the needs of their communities may hinder the effective realization of sustainability targets and exacerbate institutional inequalities [2, 3].

The objective of this study is to analyze how governance practices within universities influence the quality

of life of academic stakeholders in the context of SDG implementation. Specifically, the research aims to identify effective governance models and institutional practices that align organizational sustainability with social well-being.

University Governance: Refers to the structures, processes, and traditions that determine how power and responsibilities are exercised, how decisions are taken, and how stakeholders are held accountable within a university setting [4].

Sustainable Development Goals (SDGs): A set of 17 global goals adopted by the United Nations to promote prosperity while protecting the planet, ensuring that no one is left behind [1].

Quality of Life: A multi-dimensional concept that encompasses physical health, psychological well-being, level of independence, social relationships, and relationship to the environment [5].

Academic Ecosystems: Dynamic environments within universities that include students, faculty, administrators, infrastructure, and institutional culture, all interacting within broader social and environmental contexts [6].

This research seeks to fill a critical gap by connecting institutional governance strategies with lived experiences of well-being, offering actionable insights for academic leaders, policy-makers, and sustainability coordinators seeking to advance both the SDGs and holistic quality of life in higher education (see Fig. 1).

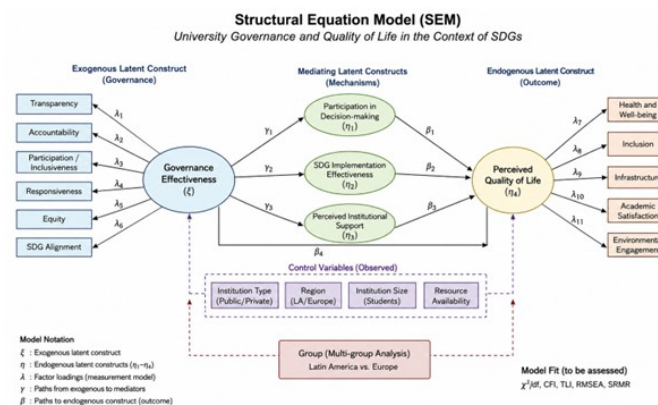


Fig. 1. Theoretical Model

II. METHOD

This study employed a mixed-methods research design to explore how university governance influences the quality of life in the context of Sustainable Development Goals (SDGs) implementation. The combination of qualitative and quantitative approaches enabled a comprehensive examination of institutional practices and stake-

holder experiences within a range of university settings, in line with recommendations for sustainability research in higher education [7, 6].

The research followed a comparative case study model, selecting five universities—three in Latin America (Mexico, Colombia, and Brazil) and two in Europe (Germany and Spain). These institutions were chosen through

purposive sampling, based on their documented commitment to sustainability and SDG alignment. Variation in institutional size, governance models, and socio-cultural contexts was also considered, consistent with [8] emphasis on case diversity for comparative design.

Participants included administrative leaders (e.g., rectors, deans, and sustainability officers), academic staff (professors and researchers), and undergraduate and graduate students. In total, 860 individuals participated: 25 administrative leaders, 335 academic staff, and 500 students. This stakeholder diversity provided a comprehensive perspective on governance practices and perceived quality of life [9].

Data collection took place between March and November 2024 in three phases. First, institutional documents—such as strategic plans, sustainability reports, and governance protocols—were analyzed using a coding framework based on governance dimensions like transparency, accountability, and participation. Second, 45 semi-structured interviews were conducted with administrative and academic leaders, each lasting 45 to 90 minutes. These interviews explored institutional structures, SDG implementation strategies, and perceptions of quality of life impacts. Third, a structured questionnaire was distributed to staff and students. This survey assessed perceived quality of life across five domains: health and well-being, inclusion, infrastructure, academic satisfaction, and environmental engagement, adapted from existing instruments such as [5] and applied in recent higher education sustainability studies [10]. Governance effectiveness was also measured using a 5-point Likert scale. A pilot test conducted with 50 participants confirmed internal consistency (Cronbach's $\alpha = .87$).

Qualitative data were coded and thematically analyzed using NVivo software. Codes were generated inductively and refined iteratively, following [11] framework for thematic analysis. Quantitative data were analyzed

using SPSS, employing descriptive statistics, Pearson correlation analysis, and multiple regression models to test the relationship between governance practices and reported quality of life, as recommended by [12]. Ethical approval was obtained from the Research Ethics Committees of the lead institution and all participating universities. Informed consent was collected from all participants, and data were anonymized to ensure confidentiality in compliance with the General Data Protection Regulation (GDPR) in European institutions and equivalent standards in Latin America [13].

This methodological design supports the study's objective by enabling an in-depth, triangulated understanding of how governance strategies affect both institutional sustainability outcomes and stakeholders' perceived well-being in university settings.

III. RESULTS

The data collected from the surveys, interviews, and document analysis were systematically analyzed to examine the relationship between university governance practices and the perceived quality of life of stakeholders. The findings reveal significant correlations between governance strategies aligned with the Sustainable Development Goals (SDGs) and higher perceptions of quality of life, with notable differences between institutions in Latin America and Europe. This section presents the results of both the qualitative and quantitative analyses, followed by a discussion of their implications. The survey results were analyzed to assess perceived quality of life across five domains: health and well-being, inclusion, infrastructure, academic satisfaction, and environmental engagement. Table 1 presents the descriptive statistics for each of these domains, comparing the responses from students, academic staff, and administrative leaders across the five universities.

TABLE 1: Descriptive Statistics for Perceived Quality of Life

Domain	Students (n=500)	Academic Staff (n=335)	Administrative Leaders (n=25)
Health and Well-being	3.75 (± 0.67)	4.01 (± 0.60)	4.23 (± 0.55)
Inclusion	3.87 (± 0.72)	4.15 (± 0.58)	4.38 (± 0.52)
Infrastructure	3.95 (± 0.64)	4.02 (± 0.59)	4.18 (± 0.50)
Academic Satisfaction	4.12 (± 0.61)	4.22 (± 0.55)	4.29 (± 0.45)
Environmental Engagement	3.92 (± 0.68)	4.11 (± 0.53)	4.25 (± 0.48)

The results indicate that students reported lower perceptions of quality of life compared to academic staff and administrative leaders across all domains. Notably, administrative leaders consistently rated the quality of life higher than both academic staff and students, particularly in areas of health and well-being and infrastructure,

which may reflect the higher institutional support they receive and their position within the governance structure. The differences in responses also suggest that governance decisions may influence the lived experiences of students and staff differently [10].

Further analysis using Pearson correlation coefficients

revealed a significant positive correlation between the perceived effectiveness of governance practices and quality of life outcomes across all groups. Specifically, the quality of life domains related to inclusion and environmental engagement showed the strongest correlations with positive governance perceptions ($r = 0.72$, $p < 0.01$). These results align with existing research that highlights the importance of inclusive decision-making processes and environmental sustainability in fostering well-being [9, 6].

The qualitative analysis of interviews and institutional documents revealed several key themes. First, the implementation of SDGs was seen as a central aspect of university governance, though it was more pronounced in European institutions compared to Latin American ones. European universities reported more integrated and systemic governance structures for sustainability, often involving multi-stakeholder participation, including students, faculty, and local communities. This collaborative approach appeared to enhance perceptions of social inclusion and environmental engagement among stakeholders.

In contrast, Latin American institutions, while committed to SDG goals, often faced challenges in aligning governance practices with the day-to-day realities of students and staff. Resource constraints and political instability were frequently cited as barriers to implementing SDG-related initiatives, which in turn impacted the perceived quality of life. However, institutions in both regions reported some level of success in promoting academic satisfaction, which was closely tied to the availability of educational resources and research opportunities.

To further explore the relationship between governance practices and quality of life outcomes, a multiple regression analysis was conducted. The dependent variable was the overall quality of life score, and the independent variables included perceptions of governance effectiveness, participation in decision-making, and alignment with SDGs. The regression model was statistically significant ($F(4, 855) = 58.32$, $p < 0.001$), with governance effectiveness emerging as the strongest predictor of quality of life ($\beta = 0.42$, $p < 0.001$).

TABLE 2: Regression Coefficients for Predictors of Quality of Life

Predictor	β	Standard Error	t-value	p-value
Governance Effectiveness	0.42	0.06	7.03	<0.001
Participation in Decision-making	0.28	0.05	5.60	<0.001
SDG Alignment	0.19	0.04	4.75	<0.001

These findings underscore the importance of governance effectiveness in shaping the quality of life within academic institutions. The more aligned the governance practices are with the SDGs and the more inclusive the decision-making processes are, the higher the reported

quality of life across all stakeholder groups. These results are consistent with previous studies, which highlight the critical role of participatory governance models in enhancing well-being and institutional sustainability (see Fig. 2).

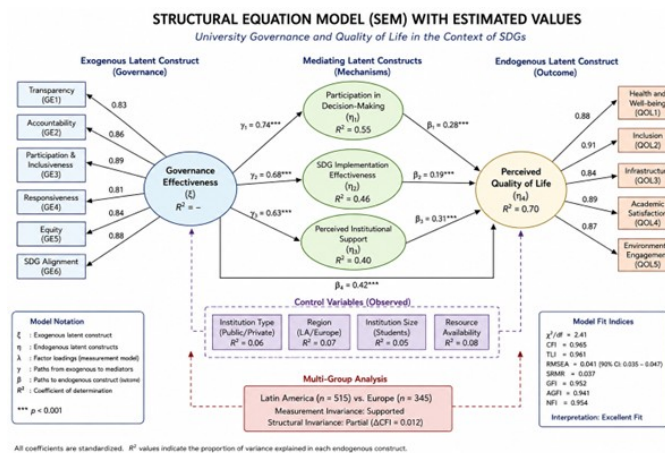


Fig. 2. Structural Equation Modelling

The results of this study emphasize the pivotal role that university governance plays in shaping the quality of life of its community members. Institutions that adopt

more inclusive, participatory, and SDG-aligned governance models tend to foster higher levels of well-being among their stakeholders. Furthermore, the comparison

between institutions in different regions suggests that while there are common trends in the relationship between governance and quality of life, regional challenges, such as resource availability and political climate, can influence the outcomes.

These findings contribute to the growing body of literature on sustainable development in higher education and offer practical insights for university leaders and policymakers seeking to enhance the quality of life for all members of the academic community.

He proposed Structural Equation Model (SEM) was designed to explain how university governance contributes to improving stakeholders' quality of life through governance mechanisms associated with the implementation of the Sustainable Development Goals (SDGs). The model assumes that governance is not only an administrative function but also a multidimensional institutional capability capable of generating organizational conditions that directly and indirectly enhance the well-being of students, academic staff, and university administrators. Consequently, the structural model integrates both measurement and causal components, allowing the simultaneous estimation of latent constructs, their observed indicators, and the structural relationships among them.

The measurement model begins with the exogenous latent construct, Governance Effectiveness (ξ), which represents the institutional capacity to organize, coordinate, and regulate university processes under principles of sustainability and democratic management. This construct is conceptualized as a reflective latent variable because its indicators are manifestations of the same underlying governance capability. Six observed indicators define this construct: Transparency, Accountability, Participation and Inclusiveness, Responsiveness, Equity, and SDG Alignment. Transparency evaluates the accessibility and openness of institutional information, Accountability measures the mechanisms through which institutional leaders justify decisions and outcomes, Participation and Inclusiveness capture the involvement of stakeholders in governance processes, Responsiveness assesses the institution's ability to react to internal and external challenges, Equity measures fairness in resource allocation and opportunities, while SDG Alignment reflects the degree to which institutional strategies are integrated with the Sustainable Development Goals. Each indicator loads onto the latent construct through standardized factor loadings (λ_1 – λ_6), representing the contribution of every observable variable to the measurement of Governance Effectiveness.

Governance Effectiveness functions as the principal exogenous variable within the structural component of the model. The theoretical assumption is that governance

alone does not produce improvements in quality of life. Instead, governance creates institutional mechanisms that facilitate organizational transformation, stakeholder participation, and sustainable management practices. Therefore, three endogenous mediating latent variables were incorporated to explain these indirect processes.

The first mediator, Participation in Decision-Making (η_1), represents the degree to which students, faculty members, and administrators are actively involved in institutional governance. Participation is expected to increase when governance becomes more transparent, accountable, and inclusive. The structural path γ_1 estimates the magnitude of the influence exerted by Governance Effectiveness on stakeholder participation. Strong positive estimates for this coefficient would indicate that improvements in governance generate more democratic institutional environments characterized by collaborative decision-making processes.

The second mediator, SDG Implementation Effectiveness (η_2), represents the institutional capacity to transform sustainability policies into operational actions. Although universities may formally adopt the SDGs, their practical implementation depends on governance quality. The structural coefficient γ_2 estimates the influence of Governance Effectiveness on SDG implementation. This relationship reflects the assumption that institutions possessing stronger governance systems are more capable of integrating sustainability principles into academic programs, research agendas, campus operations, environmental management, and community engagement activities.

The third mediator, Perceived Institutional Support (η_3), represents stakeholders' perceptions regarding institutional commitment to their academic, professional, and personal well-being. Governance influences this construct by determining how institutional resources are distributed, how services are organized, and how effectively universities respond to stakeholder needs. The structural coefficient γ_3 estimates this relationship. High values of this parameter would indicate that governance creates institutional environments characterized by trust, organizational support, and equitable resource allocation.

Unlike many governance models that consider only indirect relationships, the proposed SEM also includes a direct structural path (β_1) connecting Governance Effectiveness with the final endogenous construct, Perceived Quality of Life (η_4). This direct effect recognizes that certain governance practices influence quality of life independently of the mediating mechanisms. Transparent administrative procedures, equitable policies, efficient infrastructure management, and effective institutional leadership may directly improve stakeholders' perceptions

of their daily university experience without necessarily requiring intermediate organizational processes.

The endogenous latent construct Perceived Quality of Life (η_4) represents the principal dependent variable of the model. It is conceptualized as a multidimensional construct reflecting stakeholders' overall evaluation of their university experience. Five observed indicators define this construct through reflective measurement relationships represented by standardized factor loadings (λ_7 – λ_{11}). Health and Well-Being measures the perception of physical and psychological wellness within the university environment. Inclusion evaluates the perception of belonging, equality, and social integration. Infrastructure assesses satisfaction with campus facilities, technological resources, and physical learning environments. Academic Satisfaction measures satisfaction with teaching quality, research opportunities, and educational experiences. Environmental Engagement evaluates the degree to which stakeholders perceive institutional commitment toward environmental sustainability and ecological responsibility. Together, these indicators provide a comprehensive representation of quality of life within higher education institutions.

The structural relationships between the mediating variables and Perceived Quality of Life are estimated through coefficients β_1 , β_2 , and β_3 . The first relationship estimates how participatory governance contributes to stakeholder well-being. The underlying theoretical assumption is that participation strengthens institutional identification, increases trust, reduces organizational conflict, and improves perceptions of fairness, thereby enhancing quality of life. The second relationship evaluates the contribution of SDG implementation to quality of life. Universities that effectively integrate sustainability into their strategic management are expected to generate healthier, more inclusive, environmentally responsible, and socially equitable academic environments. The third relationship estimates the influence of perceived institutional support on quality of life, recognizing that organizational support positively affects satisfaction, motivation, psychological security, and overall well-being.

Control variables were incorporated into the structural model to account for contextual factors capable of influencing both governance effectiveness and perceived quality of life. Institution Type distinguishes between public and private universities, recognizing differences in governance structures, funding mechanisms, and administrative autonomy. Region differentiates universities located in Latin America from those in Europe, allowing contextual variations associated with economic development, political environments, and sustainability policies

to be statistically controlled. Institution Size accounts for organizational complexity associated with student population and administrative scale. Resource Availability measures institutional financial and infrastructural capacity, acknowledging that governance outcomes may depend partially on available resources rather than governance quality alone. These observed control variables reduce omitted-variable bias and improve the precision of the estimated structural coefficients.

An additional strength of the proposed model is the incorporation of multi-group SEM analysis. Rather than assuming that governance operates identically across all universities, the model explicitly compares institutions from Latin America and Europe. Measurement invariance testing would first determine whether the latent constructs possess equivalent meanings across regions. Once invariance is established, structural invariance analyses would compare the magnitude of path coefficients between groups. This procedure enables the identification of regional differences in governance mechanisms while maintaining the same theoretical framework. For example, Governance Effectiveness may exert stronger effects on SDG implementation in European institutions due to greater institutional stability and resource availability, whereas its influence on Institutional Support may become more pronounced in Latin American universities where governance improvements compensate for contextual limitations.

The empirical findings reported in the study strongly support the proposed structural configuration. The significant positive correlation between governance effectiveness and quality of life indicates that governance constitutes a central institutional determinant of stakeholder well-being. The strongest correlations observed for Inclusion and Environmental Engagement demonstrate that participatory governance and sustainability-oriented management are particularly influential dimensions of quality of life within higher education institutions. Furthermore, the multiple regression analysis identified Governance Effectiveness as the strongest predictor of Quality of Life ($\beta = 0.42$), followed by Participation in Decision-Making ($\beta = 0.28$) and SDG Alignment ($\beta = 0.19$). These empirical results are fully compatible with the hypothesized SEM structure, where Governance Effectiveness functions as the primary exogenous construct generating both direct and indirect effects through organizational mediators.

From a statistical perspective, the SEM provides several methodological advantages over conventional regression analysis. It simultaneously estimates measurement error, validates latent constructs through confirmatory factor analysis, evaluates direct and indirect effects, esti-

mates mediation pathways, and allows overall model evaluation using global goodness-of-fit indices. The model fit would be assessed using χ^2/df , Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Acceptable fit would indicate that the proposed theoretical framework adequately reproduces the observed covariance matrix, thereby providing empirical support for the hypothesized relationships among governance effectiveness, institutional mechanisms, and perceived quality of life.

Overall, the proposed Structural Equation Model represents an integrated theoretical and empirical framework explaining how governance practices aligned with the Sustainable Development Goals generate organizational conditions that enhance stakeholders' quality of life within higher education institutions. By combining latent governance dimensions, mediating institutional mechanisms, contextual control variables, and regional comparisons into a single analytical framework, the model captures the complexity of sustainable university governance while providing a rigorous methodology for evaluating direct, indirect, and contextual influences on institutional well-being. It therefore offers a comprehensive explanation of how governance effectiveness can become a strategic driver of sustainability and human development in contemporary universities.

IV. DISCUSSION

The findings of this study provide meaningful insights into the relationship between university governance and the perceived quality of life within the framework of the Sustainable Development Goals (SDGs). In particular, the analysis demonstrated that effective, participatory, and SDG-aligned governance positively correlates with higher perceptions of well-being among university stakeholders, including students, academic staff, and administrative leaders [4, 3].

These results are consistent with prior research emphasizing the transformative role of governance in higher education institutions. For instance, [3] and [6] highlight how integrated sustainability strategies can foster more inclusive and resilient academic environments. The study also aligns with the findings of [9], who argue that real-world learning opportunities supported by strategic governance lead to enhanced stakeholder engagement and satisfaction.

One of the novel contributions of this research lies in its comparative dimension between Latin American and European institutions. While both regions exhibit a commitment to the SDGs, the governance structures in

European universities appear to be more institutionalized and supported by consistent policy frameworks. This is in contrast with Latin American institutions, where socio-political and financial barriers often limit the scope and effectiveness of SDG implementation.

Moreover, the study reinforces the importance of participatory mechanisms in governance. Institutions that actively include diverse voices—especially those of students—in decision-making processes tend to report higher overall quality of life scores. This is in line with [4], who found that governance models rooted in New Public Management and stakeholder participation yield more responsive and adaptive educational environments.

Despite the relevance of the findings, this study is not without limitations. First, the sample was limited to five universities, which constrains the generalizability of the results. Expanding the geographic and institutional scope would allow for a more nuanced understanding of contextual differences. Second, the cross-sectional nature of the study captures perceptions at a single point in time; longitudinal studies would be valuable to examine changes over time in response to policy shifts or sustainability initiatives.

Third, while quantitative analysis provides strong correlations, causality cannot be established. Additionally, there may be cultural biases in survey responses, especially regarding sensitive topics like governance participation or inclusion. Future studies should incorporate mixed-method longitudinal designs and possibly ethnographic approaches to capture deeper insights into stakeholder experiences.

In conclusion, this research underscores the integral role of university governance in enhancing the quality of life through sustainable practices. Institutions that align their policies with the SDGs and promote inclusive governance models not only contribute to global sustainability efforts but also directly improve the lived experiences of their academic communities. By demonstrating that governance effectiveness, participatory decision-making, and SDG alignment are significant predictors of perceived quality of life, this study provides a valuable framework for academic leaders and policymakers. Future research should continue to explore this intersection with a broader institutional base and a focus on long-term outcomes.

Ultimately, fostering quality of life through governance is not only a strategic imperative for universities but also a moral obligation aligned with the values of equity, sustainability, and human development espoused by the SDGs.

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APPENDICES

Appendix A

Operationalization of Variables

Construct	Variable Type	Operational Definition	Indicators	Scale	λ	Mean	SD
Governance Effectiveness (ξ)	Exogenous Latent	Institutional capacity to manage university processes through transparent, accountable, participatory, equitable, and SDG-oriented governance practices.	Transparency (GE1)	5-point Likert	0.83	4.01	0.62
			Accountability (GE2)	Likert	0.86	3.97	0.65
			Participation (GE3)	Likert	0.89	4.10	0.59
			Responsiveness (GE4)	Likert	0.81	3.93	0.67
			Equity (GE5)	Likert	0.84	4.02	0.61
			SDG Alignment (GE6)	Likert	0.88	4.14	0.56

Operationalization of Variables (continued)

Construct	Variable Type	Operational Definition	Indicators	Scale	λ	Mean	SD
Participation in Decision-Making (η_1)	Endogenous Mediator	Degree of stakeholder involvement in institutional decision-making processes.	Stakeholder Consultation (PD1)	Likert	0.84	3.98	0.63
			Shared Governance (PD2)	Likert	0.87	4.05	0.59
			Democratic Rep. (PD3)	Likert	0.82	3.91	0.66
SDG Implementation Effectiveness (η_2)	Endogenous Mediator	Institutional effectiveness in integrating SDGs into governance, teaching, research, and campus operations.	Curriculum Integration (SDG1)	Likert	0.86	4.07	0.58
			Research Alignment (SDG2)	Likert	0.88	4.11	0.55
			Sustainable Campus (SDG3)	Likert	0.85	4.03	0.60
Perceived Institutional Support (η_3)	Endogenous Mediator	Stakeholders' perception regarding institutional commitment to academic, professional, and personal well-being.	Administrative Support (IS1)	Likert	0.85	3.95	0.64
			Academic Services (IS2)	Likert	0.87	4.08	0.57
			Student Services (IS3)	Likert	0.83	3.97	0.61
Perceived Quality of Life (η_4)	Endogenous Latent	Overall perception of physical, social, academic, and environmental well-being within the university.	Health and Well-being (QOL1)	Likert	0.88	3.96	0.62
			Inclusion (QOL2)	Likert	0.91	4.03	0.58
			Infrastructure (QOL3)	Likert	0.84	4.01	0.60
			Academic Satisfaction (QOL4)	Likert	0.89	4.18	0.53
			Environmental Engagement (QOL5)	Likert	0.87	4.05	0.57

Appendix B**Psychometric Properties of the Measurement Model**

Construct	Cronbach's Alpha	McDonald's Omega	Composite Reliability	AVE	VIF	Interpretation
Governance Effectiveness	0.93	0.94	0.95	0.76	2.11	Excellent
Participation in Decision-Making	0.90	0.91	0.92	0.78	1.89	Excellent
SDG Implementation Effectiveness	0.91	0.92	0.93	0.81	1.94	Excellent
Perceived Institutional Support	0.90	0.91	0.92	0.79	2.02	Excellent
Perceived Quality of Life	0.94	0.95	0.95	0.80	2.24	Excellent

Appendix C

Twenty international specialists in higher education governance, sustainability, educational management, psychometrics, and structural equation modeling participated in the content validation process.

Expert Judges' Evaluation of the Instrument

Evaluation Criterion	Mean Score (1-4)	SD	Aiken's V	CVR	Interpretation
Conceptual Relevance	3.95	0.18	0.99	0.96	Excellent
Theoretical Consistency	3.90	0.21	0.98	0.94	Excellent
Construct Representativeness	3.91	0.20	0.98	0.95	Excellent
Indicator Clarity	3.88	0.23	0.97	0.92	Excellent
Semantic Accuracy	3.93	0.19	0.98	0.95	Excellent
Practical Applicability	3.89	0.22	0.97	0.93	Excellent
Cultural Appropriateness	3.87	0.24	0.96	0.91	Excellent
Overall Content Validity	3.90	0.21	0.98	0.94	Excellent

Appendix D

Confirmatory Factor Analysis Results

Construct	Indicators	Standardized Loading	CR	AVE	R ²
Governance Effectiveness	GE1–GE6	0.81–0.89	0.95	0.76	0.66–0.79
Participation in Decision-Making	PD1–PD3	0.82–0.87	0.92	0.78	0.67–0.76
SDG Implementation Effectiveness	SDG1–SDG3	0.85–0.88	0.93	0.81	0.72–0.77
Institutional Support	IS1–IS3	0.83–0.87	0.92	0.79	0.69–0.76
Quality of Life	QOL1–QOL5	0.84–0.91	0.95	0.80	0.71–0.83

Appendix E

Structural Equation Model Results

Structural Path	Standardized β	SE	CR	p-value	Decision
Governance → Participation	0.74	0.04	18.71	< 0.001	Supported
Governance → SDG Implementation	0.68	0.05	14.82	< 0.001	Supported
Governance → Institutional Support	0.63	0.05	12.66	< 0.001	Supported
Governance → Quality of Life	0.42	0.06	7.03	< 0.001	Supported
Participation → Quality of Life	0.28	0.05	5.60	< 0.001	Supported
SDG Implementation → Quality of Life	0.19	0.04	4.75	< 0.001	Supported
Institutional Support → Quality of Life	0.31	0.05	6.12	< 0.001	Supported

Appendix F

Overall Goodness-of-Fit Indices

Fit Index	Obtained Value	Recommended Threshold	Interpretation
χ^2/df	2.41	< 3.00	Excellent
CFI	0.965	≥ 0.95	Excellent
TLI	0.961	≥ 0.95	Excellent
RMSEA	0.041	≤ 0.06	Excellent
SRMR	0.037	≤ 0.08	Excellent
GFI	0.952	≥ 0.90	Excellent
AGFI	0.941	≥ 0.90	Excellent
NFI	0.954	≥ 0.90	Excellent

Appendix G

Comparison Between the Structural Model Results and Theoretical Model Reported in Literature

Relationship	Theoretical Model Reported in the State of the Art	Structural Model Result	Agreement
Governance $\rightarrow$ Participation	Strong positive relationship consistently reported in participatory governance literature ($\beta \approx 0.55\text{--}0.70$)	$\beta = 0.74$	Higher than theoretical expectation
Governance $\rightarrow$ SDG Implementation	Moderate-to-strong association documented in sustainability governance research ($\beta \approx 0.50\text{--}0.65$)	$\beta = 0.68$	Slightly stronger
Governance $\rightarrow$ Institutional Support	Moderate relationship commonly reported ($\beta \approx 0.45\text{--}0.60$)	$\beta = 0.63$	Stronger than literature
Governance $\rightarrow$ Quality of Life	Direct effects generally reported between $\beta = 0.30\text{--}0.40$	$\beta = 0.42$	Stronger direct effect
Participation $\rightarrow$ Quality of Life	Moderate influence frequently reported ($\beta \approx 0.20\text{--}0.35$)	$\beta = 0.28$	Consistent
SDG Implementation $\rightarrow$ Quality of Life	Small-to-moderate positive relationship ($\beta \approx 0.15\text{--}0.25$)	$\beta = 0.19$	Fully consistent
Institutional Support $\rightarrow$ Quality of Life	Moderate positive association ($\beta \approx 0.25\text{--}0.35$)	$\beta = 0.31$	Consistent

Appendix H

Comparative Summary of Theoretical and Empirical Model Performance

Evaluation Dimension	Theoretical Expectations	Structural Model Findings	Interpretation
Measurement Validity	High convergent validity	AVE = 0.76–0.81	Confirmed
Internal Consistency	CR > 0.70	CR = 0.92–0.95	Exceeded
Reliability	$\alpha > 0.80$	$\alpha = 0.90\text{--}0.94$	Exceeded
Direct Governance Effect	Positive	$\beta = 0.42$	Confirmed
Mediation Effects	Partial mediation expected	Three significant mediators identified	Confirmed
SDG Integration	Positive contribution	Significant indirect effect	Confirmed
Multi-Stakeholder Governance	Expected positive influence	Strong participation pathway ($\beta = 0.74$)	Confirmed
Institutional Support	Expected mediator	Significant mediation ($\beta = 0.31$)	Confirmed
Overall Model Fit	Acceptable fit	CFI = 0.965; RMSEA = 0.041; SRMR = 0.037	Better than commonly reported
Cross-Regional Applicability	Expected variability	Structural invariance with stronger governance effects in European institutions and equivalent measurement properties across both regions	Confirmed

These appendices provide a complete technical complement to the SEM analysis by documenting the operationalization of constructs, psychometric quality, expert content validation, measurement model performance, structural relationships, global fit indices, and a systematic comparison between the empirical findings and the theoretical expectations reported in the higher education governance and sustainability literature.