AN EFFECTIVE FRAMEWORK FOR SUSTAINABILITY ASSESSMENT FOR ALIGNING HIGHER EDUCATION INSTITUTIONS WITH SUSTAINABLE DEVELOPMENT GOALS

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ABSTRACT

The foundations of intellectual development in a society are higher education institutions (HEIs). HEI have the power to influence the future of society, the environment, and the economy through acceleration the achievement of the Sustainable Development Goals (SDGs). A significant step towards achieving sustainability mainstreaming is the integration of sustainability evaluation into HEIs. There is an under-utilization of Sustainability Assessment Tools (SATs) in developing nations like Pakistan, where the idea of sustainability assessment is still in its infancy. Unfortunately, Pakistani HEIs lack thorough research on sustainability assessment, especially with relation to the SDGs, which serve as crucial benchmarks for such assessments. The main goal of this study is to provide an all-encompassing sustainability framework that is integrated and comprehensive for evaluating HEI sustainability while taking the SDGs into consideration. The process comprises of a thorough evaluation of the relevant academic literature that addresses the main SAQ dimensions, which are then in line with the SDGs. Cognitive interviews helped to develop the questionnaire, and an Analytical Hierarchy Process (AHP) was used to assess the relative significance of each key factor. Afterwards, a pilot survey was carried out to gauge the framework's effectiveness. Based on how these factors weighted compared to one another, sustainability scores were calculated. The results show that some dimensions, including Outreach and Services, Student Engagement, and Administration and Planning, scored poorly on sustainability. These aspects need significant attention and development. On the other hand, sustainability scores were slightly above average for aspects including curriculum, operations, research, and scholarship, which performed marginally better. However, it is clear that in order to promote sustainability and make real progress, HEIs place a comprehensive focus on all sustainability dimensions.

Keywords: HEIs, Sustainability, Analytical Hierarchy Process, Framework

INTRODUCTION

An unsustainable environment has been created in recent decades as a result of an increasing convergence of international economic, institutional, environmental, and social problems as well as political instability. As a practical response to these urgent problems, the ideas of sustainable development and sustainability have evolved. Given the growing social awareness of our obligation to future generations, applying a sustainable development approach has become essential.

The term 'Sustainable Development' was originally coined by the Brundtland Commission (1987), which defined it as follows: 'Sustainable development is the development that meets the needs of the present without compromising the

ability of future generations to meet their own needs.' his definition underscores the fundamental principle of sustainability, which involves the integration off our key criteria: environmental considerations (e.g., infrastructure and ecological management), social factors (e.g., public awareness and participation), economic dimensions (e.g., income growth), and institutional elements (e.g., information and systems of rules governing societal interactions) (Brundtland, Khalid, Agnelli, & Al-Athel, 1987).

According to UNESCO (2015), Higher Education Institutions (HEIs) are essential to advancing the Sustainable Development Goals (SDGs), which in turn helps to determine how society, the environment, the economy, and various institutions will develop in the future. Therefore, a sustainable HEI acts as a catalyst for tackling the environmental, institutional, societal, and economic issues that already exist as well as those that will surface in the future. This is accomplished by improving resource management and making wise, strategic judgements.

LITERATURE REVIEW:

In their comments, El-Jardali et al. (2018) stated that HEIs occupy a special position as pioneers in the cross-sectoral application of the SDGs. They are also recognized as powerful and objective players that provide incalculable knowledge in research and teaching across all areas covered by the SDGs. Leal Filho, Manolas, and Pace (2015) emphasized that given their crucial role in directing research, teaching, and social participation towards sustainable development, HEIs enjoy widespread recognition as major stakeholders within the SDGs framework. The SDGs offer HEIs a chance to revamp their institutional plans and set up the appropriate frameworks to promote cooperation with communities and governments (Barth, Michelsen, Rieckmann, & Thomas, 2015).

According to several academics, Higher Education Institutions (HEIs) actively participating in sustainability projects not only helps to create a more sustainable society, but it also promotes a seismic cultural shift. Additionally, it is an effective way to give colleges a fresh, appealing brand identity (Savanick, Strong, & Manning, 2008). Universities serve as important cornerstones of intellectual life and have a multifaceted role in society as suppliers of higher education (Altbach, 2008). HEIs have a crucial role in igniting cultural and social transformations as a result of their research contributions and the education they offer to aspiring leaders, thinkers, and change-makers (Lozano, 2006). HEIs have the capacity to act as societal paradigms and establish standards for other institutions to aspire to through their unwavering dedication and skillful management of campus resources (Reza, 2016).

Higher education institutions (HEIs) have long acted as supporters of steady advancement in the field of higher learning. The growth of sustainability centers in colleges is a sign of HEIs' commitment to sustainability, according to research by Soini et al. (Lozano et al., 2015). The study of Lozano et al., however, emphasizes the difficulties HEIs confront in converting sustainable development into practicable methods, frequently operating in silos rather than pursuing thorough integration. When migrating to sustainability, HEIs face challenges such limited resources, technological restrictions, and institutional culture in addition to the complexity of daily operations (Disterheft, Caeiro, Azeiteiro, & Leal Filho, 2013).

Due to the significant impact on politics, administration, science, philosophy, and other areas, HEIs play a crucial role in educating the next generation of decision-makers (Roorda et al., 2009). As a result, teaching and learning about sustainability must be incorporated, and continuing campus research must be considered

(Ferran Vila, Miotto, & Rodríguez, 2021). As described by SDSN (Schmidt-Traub et al., 2017), the relationship between HEIs and the SDGs has many advantages, including encouraging cooperation and securing additional funding, increasing demand for SDG-focused education, and establishing globally accountable HEIs.

The SDGs offer a special opportunity to advance sustainability initiatives inside HEIs internationally, according to Neubauer and Calame the University of Melbourne's commitment to integrating SDG efforts into sustainability evaluations Liang et al., (2021) demonstrates how universities are progressively adopting the SDGs into their policies and programs.

To enhance universities' engagement with the SDGs, SDSN outlines five stages: 1) Promoting SDG integration into university strategies and policies, monitoring, evaluation, and discussion, increasing SDG knowledge and ownership, reviewing current SDG projects, identifying priorities and opportunities, and integrating SDGs into university strategies and policies (Schmidt-Traub et al., 2017). Given their significant ability for knowledge diffusion, HEIs are essential to achieving the SDGs (Loewe et al., 2015).

Dissemination of SDGs implementation experiences in HEIs is essential, particularly when these experiences highlight remarkable initiatives . Therefore, proving the impact and progress of these efforts requires statistics to assess and evaluate them. As measurements for data gathering, analysis, and well-informed decision- making, indicators are essential (Swain, 2018).

Considering that the 2030 Agenda and its goals were recently adopted, organizations are still in the process of developing accounting criteria to track and communicate their performance (Tsalis et al., 2020). This makes including indications into reports an essential element. With Neubauer and Calame (Liang et al., 2021) emphasizing their value in supporting decisions within stakeholder conversations, Alghamdi et al. (2017) and Neubauer and Calame (Liang et al., 2021) both highlight the importance of these

indicators as useful tools for evaluating and monitoring processes and outcomes.

The move towards a sustainable society is facilitated by the sustainability of HEIs (Disterheft, Caeiro, Azeiteiro, & Leal Filho, 2013). HEIs themselves must change for HEIs to be really transformative (Alghamdi, den Heijer, & de Jonge, 2017). Within HEI systems, sustainability should be fundamental, not just an "add-on" (Barth, Michelsen, Rieckmann, & Thomas, 2015b). It ought to infiltrate each and every element of HEIs. Universities run the risk of becoming nothing more than factories for producing information and students for financial benefit without this all-encompassing viewpoint. There is currently little research on the effects of larger sustainability policies and related case studies on institutional operations (Koehn & Uitto, 2014). This presents two difficulties: first, in order to meet the norms for accountability set by many stakeholders, such as donors, policymakers, accreditation agencies, students, and employees (Cole, 2003), many HEIs must declare their contributions to sustainable development. Second, there are several interpretations of the term "sustainability" (Urbanski & Rowland, 2014), making it necessary to have more clarity in order to make educated strategic decisions.

Assessment and evaluation of sustainability are seen as being crucial to advancing the mainstreaming of sustainability inside HEIs. A growing corpus of literature (Zwickle, Koontz, Slagle, & Bruskotter, 2014), (Remington-Doucette et al., 2013) emphasizes the importance of sustainability assessment and evaluation as a powerful argument in favour of sustainability implementation in HEIs.

A strong and comprehensive framework for sustainability assessment and evaluation is therefore considered crucial for sustainable HEIs. Numerous HEIs around the world use well-known Sustainability Assessment Tools (SATs) like STAR, AISHE, SAQ, AUA, STAUNCH, and GASU (Barth, Michelsen, Rieckmann, & Thomas, 2015b).

CASE OF PAKISTAN:
Many of the current frameworks have a tendency to focus only on certain aspects of sustainable development or heavily rely on

economic indicators, despite the fact that there are many efficient approaches within assessment frameworks that can be tailored to different audiences and address significant sustainability challenges (Shriberg, 2002), (Wals, 2014). Some frameworks are extremely complicated, which makes them less useful for use in HEIs. Additionally, the SDGs are not included in or aligned with the majority of SATs.

The fact that SATs are underutilized in HEIs in developing nations, with the majority of studies being carried out in the US, Australia, and Europe, including Germany and the UK, presents an important conundrum. The idea of sustainability evaluation is still in its infancy in Pakistan, a developing nation with a fast-expanding number of HEIs (Alshuwaikhat & Abubakar, 2008). About 195 recognized HEIs that grant degrees were listed by Pakistan's Higher Education Commission (HEC) (Liang et al., 2021). Due to the difficulties, they encounter, several HEIs are thinking of implementing SD.

With a focus on the SDGs, the HEC launched green projects in 15 higher education institutions in Pakistan in 2018 (Cole, 2003). Nevertheless, despite growing awareness of sustainable development, there is still a sizable gap among Pakistan's HEIs when it comes to measuring and evaluating sustainability principles, particularly in the context of the SDGs.

The proverb "What gets measured, gets managed," which was popularized by management guru Peter Drucker, emphasizes this mismatch. Although sustainability in HEIs has been the subject of numerous studies in Pakistan, sustainability evaluation techniques have received less attention. For example, Bukhari et al. (Bukhari, Hashim, & Amran, 2023) found a lack of commitment and interest from academic administrators in involving stakeholders to understand sustainability concepts, with their study primarily concentrating on the Administration and Planning aspect of HEIs, leaving other critical dimensions of sustainable development unexplored.

Tariq et al. 2021 demonstrated a favourable effect on students' environmental awareness in relation to green initiatives in HEIs. However, Kalsoom et al. (2021) found gaps in teacher awareness, knowledge of sustainable development, and organizational culture with reference to teacher sustainability consciousness. This knowledge gap emphasizes the need for a more thorough approach to comprehend sustainability issues within Pakistani HEIs.

In light of the aforementioned findings, it is clear that Higher Education Institutions (HEIs) significantly lack comprehensive sustainability evaluation. Without the use of specialized Sustainability Assessment Tools (SATs), the current assessments mostly rely on straightforward survey approaches. In Pakistani HEIs, there aren't many research papers on sustainability assessment, as highlighted by a key study by Habib et al. (2021).

They stress the need for more research to understand and assess sustainability practices in Pakistan's higher education system, particularly at the top management level where the idea is still relatively new. Given these serious flaws, the creation of an all-encompassing and integrated framework is urgently needed. The management, governance, research, teaching, and learning on campus, as well as internal and external social and institutional involvement, should all be covered by such a framework as vital and pertinent parts of the sustainability process. Furthermore, essential participants in this framework should be actively involved, including local communities,

businesses, non-profit organizations, educators, and students.

METHODOLOGY

Linking the 17 SDGs to the key components of the Sustainability Assessment Questionnaire (SAQ) was a crucial step. To do this, each indicator (question) within the key SAQ aspects was meticulously examined in relation to the SDGs. This thorough examination made it easier to match sustainable concepts with the SDGs'

goals and ambitions, creating precise criteria for future research.

Two unique sections made up the questionnaire used for this investigation. The purpose of the first segment was to collect general information about the respondents, such as background information and demographics. Seven sub-sections, each covering a different component of sustainability assessment, made up the second portion, which was devoted to the SAQ's primary dimensions as shown in Table 1.

Table 1

Dimensions of SAQ

Dimensions of SAQ	Sustainable Development Goals	Targets
1. Curriculum	SDG-4	• Promoting equitable access for men and women to high-quality, reasonably priced technical, vocational, and postsecondary education, including higher education, is the aim. By 2030, there should be a significant increase in the number of young and adult people with the necessary skills, such as technical and vocational knowledge, for greater employment possibilities, respectable occupations, and entrepreneurship. • To remove gender inequalities in education and offer fair opportunities at all educational and vocational training levels to those who are more vulnerable, including children, indigenous peoples, and people with disabilities. • Make sure that every student has a thorough education that provides them with the information and abilities necessary for sustainable development. This includes teaching them about topics like gender equality, sustainable living, human rights, and the development of a peaceful, nonviolent culture.
2. Research and Scholarships	SDG-9, SDG-2, SDG-3, SDG-7, SDG-14, and SDG 17	• Promote creativity, increase the number of people working in research and development per million, and increase both public and private funding for research. • The goal of this endeavor should be to advance scientific knowledge and technological capacities in a variety of industrial domains, especially in emerging nations. • The need for scientific research and input on the development of vaccines, sustainable

		agriculture, including environmentally friendly production and consumption;
		• To foster technological advancement, research, and innovation in developing countries by establishing a favorable policy environment that supports industrial diversification and adds value to commodities.
3. Operations	SDG-1, SDG-2, SDG-3, SDG-4, SDG-5, SDG-6, SDG-7, SDG-8, SDG-9, SDG-10, SDG-11 and SDG-12	• Creating safety nets for kids from low-income families, like as aid programs and scholarship opportunities. • Facilitate on-campus food production by offering affordable, healthy, and sustainable dining options. • Make health and wellness services on campus reasonably accessible. • Adopt wellness programs for academic workers, students, and professors to improve mental health and lower the incidence of non-communicable diseases. Establishing appropriate protocols for managing hazardous substances. • Helping underprivileged and vulnerable persons to enroll in and participate actively in the university, including aboriginal peoples, people with impairments, and those in need of financial assistance. • Implementing workplace gender equality initiatives, such as those focused on augmenting the proportion of women occupying upper echelons of academia and holding leadership roles in academic institutions. • Actively closing the gender pay gap; participating in national campaigns to lessen violence against women; and incorporating aspirational ecologically friendly design aspects into capital projects. • Providing free water to all guests, employees, and students establishing rules with zero net emissions and financing the production of renewable energy on campus. • To create all-encompassing strategies for mitigating and adapting to climate change, tackling the obstacles it presents and guaranteeing the resilience of ecosystems and communities. • Including the risk of climate change in risk reporting systems. • Examining sustainability performance up to the council level. • Including academic staff and students in all environmental projects on campus. • Organizing training, hiring, and regulatory regulations to fulfill promises of fairness and

		goals of access.
		• Offering financial aid and scholarships to deserving students who are well-positioned and supported.
		• Experimenting with and putting new methods into practice to improve campus operations.
4. Faculty and Staff Development and Rewards	SDG-4, SDG-8, SDG-10, SDG-16	• Controlling the wage gap between the lowest-paid and highest-paid employees.
		• Coordinating employment, training, and regulatory policies to fulfill commitments to equity and access goals. establishing plans, guidelines, and practices to ensure the security of all employees, students, and visitors on the campus.
		• Making sure that procurement procedures and rules explicitly forbid working with any companies that have been shown to use human beings for exploitation.
5. Outreach and Service	SDG-11 and SDG-17	• Putting in place rules and procedures that blatantly support building, maintaining, and enhancing global connections.
		• Assisting state and local governments in promoting the provision of more sustainable transportation options, such as public transportation and bike lanes, and improving the accessibility of these options
6. Students Opportunities	SDG-4, SDG- 8 and SDG-16	• Putting in place rules and procedures that blatantly support building, maintaining, and enhancing global connections.
		• Assisting state and local governments in promoting the provision of more sustainable transportation options, such as public transportation and bike lanes, and improving the accessibility of these options
7. Administration, Mission and Planning	SDG-4, SDG-8, SDG-10 and SDG-16	• Encouraging underrepresented and vulnerable groups, such as native peoples, people with disabilities, and those in financial need, to sign up for and participate in university.
		• Adopting socially and environmentally responsible procurement rules and practices will have an impact on all links in the supply chain. Monitoring employment results and managing academic workload.
		• Ensuring that each faculty member and each student has a right to justice and understanding of its rights,

The questionnaire underwent a critical pre-testing process through cognitive interviews. The goal was to evaluate how well respondents understood the survey's questions and their capacity to offer precise and insightful answers. This called for a thorough investigation of the thought processes used by the survey respondents to interact with the survey questions.

Given that these people have important insights into the sustainability landscape, the respondents were chosen in accordance with the primary stakeholders of HEIs. The following categories were used to group the key stakeholders within HEIs:

  i. Students
  ii. Faculty Staff
  iii. Managerial Staff

A stark fact emerged from the qualitative analysis of the interview responses: Pakistan's Higher Education Institutions (HEIs) generally lacked a basic knowledge of sustainability. Notably, sustainability was not emphasized heavily in the curricula of many universities. The interviews also showed that a sizable majority of respondents had trouble understanding the idea of sustainability. As a result, it became clear that the questionnaire needed to have a prominent explanation of sustainability at the beginning.

Furthermore, it was decided that it was crucial to provide simple definitions for words like "Operations" and the other six dimensions of educational sustainability in order to improve clarity and comprehension. This was done to make sure that responders understood the exact nature of the questions that were being posed to them. To aid in improved understanding, specific sentences and terms that presented comprehension challenges were carefully clarified.

A Likert scale was chosen as the preferable measurement scale in order to simplify the questionnaire and improve respondent-friendliness. The Likert scale has a number of benefits, such as better response distribution and easier comprehension. There were five different response possibilities on the scale that was used for this study.

I.   Strongly Agree
II.   Agree
III.   Neutral
IV.   Disagree
V.   Strongly disagree

In order to accomplish its two main goals—first, to gain understanding of the subjectivities and priorities of various stakeholders, and second, to determine the weights necessary for the monitoring and evaluation framework intended for sustainability—AHP was used in this study. The opinions of each respondent were taken into account separately for weight estimation and analysis.

The problem was initially broken down into a hierarchical structure before the AHP methodology was employed to enable a more simple and objective assessment. Decision-makers may systematically compare multiple possibilities against one another for each selected criterion after this logical hierarchy had been constructed. This methodical technique improved review and sped up decision-making.

The ability of AHP to convert empirical comparisons into numerical numbers for further study and comparison is one of its primary strengths. This transformation enables the assessment of each component of the proposed hierarchy according to the weights given to each criterion. AHP is superior than other comparison techniques at turning empirical data into mathematical models.

Numerical probabilities were generated for each alternative after all paired comparisons were finished and the relative weights for each assessment criterion were determined. These probabilities represent the possibility that each choice will be effective in reaching the main goal of the study. A higher probability indicates a

larger chance that an alternative will provide the desired result.

To determine its viability among the important stakeholders of Higher Education Institutions (HEIs), a pilot survey employing the upgraded version of the questionnaire was carried out. A thorough data collection strategy was developed for Higher Education Institutions (HEIs) once the questionnaire was improved. Print-out surveys and Google Forms were used to collect data, both of which had their merits.

Questionnaire: Data collection was simple because many respondents preferred completing a paper survey than clicking on an online link.

The manually recorded survey responses were then imported into IBM SPSS for additional analysis. Google Forms: Utilizing Google Forms simplified the process of record-keeping for the responses collected.

Responses were efficiently retrieved and seamlessly uploaded into the software for subsequent analysis.

Based on estimates of the sample size, the number of respondents needed for our survey was determined. The ideal population size for a data survey can be determined using this technique. The population size, or total number of people in the group under study, must be taken into account in order to do this computation. This population size in our study totals 415 respondents.

The information gathered from the questionnaire was evaluated in a variety of ways. First, we looked at how participant attributes—such as academic year and gender—relate to how they develop ethically within their different fields of study. We also looked at how gender, year groups, and academic disciplines interact in terms of ethical growth. After the data collection phase was complete, the data

analysis step started. The analytical tool for this study project was IBM SPSS. The Analytical Hierarchy Process (AHP) was used to determinethe sustainability score.

DATA TYPE

In this study, the data comprised 70.89% males and 29.11% females, underscoring the importance of gender equality as an SDG. Achieving this goal necessitates the mainstreaming of gender considerations across various facets of education, encompassing resources, pedagogy, faculty, community leaders, administrators, infrastructure, families, and the broader community.

Respondents who completed the SAQ were divided into the following stakeholder categories: 51.90% of the population were students, 30.38% were lecturers or other teaching personnel, 16.46% worked in administration, and just 1.27% were both students and lecturers.

The plurality (51.90%) of those who were affiliated with HEIs had been studying or working there for less than five years, whilst 31.65% had been doing so for five to ten years, 10.13% had been doing so for ten to fifteen years, and 6.33% had been doing so for more than fifteen years.

Government institutions made up 67.09% of the sample, private institutions made up 22.78%, and semi-government HEIs made up 10.13%. Participants were chosen from a variety of institutions. The majority (70.89%) of the institutions where the sustainability survey was done were over the age of 15, followed by 15.19% that were between the ages of 10-15, and 12.66% HEIs were under the age of 10.

Finally, just 12.66% of participants had previously completed a survey on sustainability assessment, compared to 75.85% of participants who had not. This discrepancy draws attention to the lack of study being done on sustainability studies in Pakistan's HEIs.

In order to adequately prepare students for post-graduate professions, administrative divisions within HEIs must address the integration of sustainability. To close this gap, HEIs should set up campus sustainability offices or structured, integrated processes to launch comprehensive sustainability projects, promoting an organized effort across the university.

RESULTS AND DISCUSSION

For this study, the reliability and internal consistency of the survey data were evaluated using the Cronbach's alpha reliability test. This test is well known and favored, especially when using Lickert scales because it gives an indication of how reliable the scale is. A value between 0 and 1 is produced by Cronbach's alpha, with values nearer 1 suggesting greater internal consistency across the variables. This test was used in the study to make sure that the data were accurate and consistent, which improved the overall calibre and legitimacy of the research conclusions.

In order to investigate the linear correlations between the seven sustainability measures, bivariate correlation analysis was used. The correlation coefficient (r), with its statistical significance evaluated, assesses the strength and direction of these relationships.

All correlation coefficients were positive, demonstrating a favourable association between the variables. Values varied above 0, showing a strong correlation between all seven indices. With a correlation coefficient of 0.743, Outreach and Services and Student Engagement were shown to have the strongest association.

The relative weights of each sustainability indicator were calculated using an analysis of the prioritization matrix. The matrix underwent the normalization process, producing eigenvector values for each indicator. For consistency, the highest eigenvalue (max) was also determined.

After computation, the consistency index (CI) was determined to be 0.0651. The consistency rate (CR), which was determined by contrasting the CI with the random consistency index (RI), was used to evaluate the matrix's consistency. Our investigation revealed the CR to be 7.24%, which is less than 10%, demonstrating the consistency of the matrix.

The contribution of the first level's priority criterion to the overall sustainability target in Pakistan's higher education institutions (HEIs) was 26.6%, as shown in Figure 1. Comparatively speaking, the "Planning & Administration" metric only makes up 6.3% of the sustainability of Pakistani HEIs.

These results demonstrate the various weights given to each sustainability criterion in the context of HEIs in Pakistan.

Figure 1
Prioritization percent
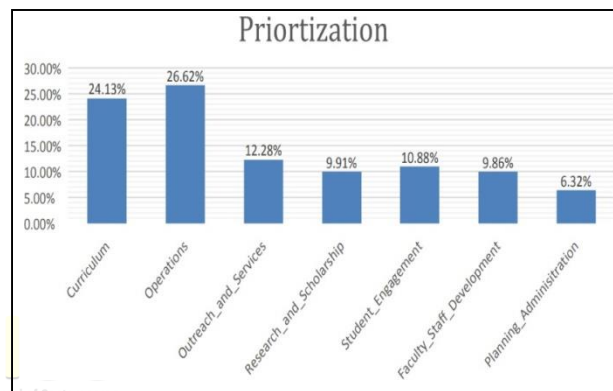
This study's analysis of sustainability indicators in HEIs was essential to determining the current sustainability status of Pakistan's higher education system. A thorough survey was carried out in Pakistan across a variety of HEIs to achieve this goal. This survey looked into administrative, academic, research, and collaborative activities as well as other areas to determine the presence and scope of sustainability programs.

A complete assessment of the survey form created for HEIs was conducted in order to match it with the recently developed Sustainable Assessment Questionnaire (SAQ) in order to gain a detailed understanding of the breadth and nature of sustainable practices inside Pakistani institutions. This process of alignment made sure that the examination of how these institutions incorporate sustainability concepts into their organizational structures and daily operations was more precise and detailed. For a clearer comparative analysis, Figure 2 provides a

clear and comprehensive summary of the status of sustainable integration within HEIs in Pakistan, visually illustrates the conclusions that emerged from this investigation.

Figure 2
HEIs Sustainability Score
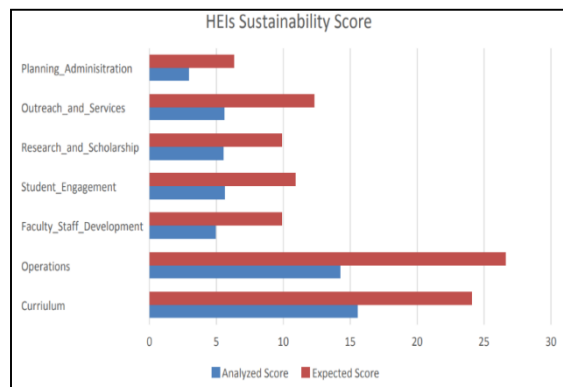
This comprehensive analysis not only sheds light on the current landscape of sustainability in these institutions but also offers invaluable insights into the mechanisms and initiatives that propel sustainability within them.

The sustainability analysis of HEIs covered a number of important factors, each of which provided insight into the sustainability of Pakistan's higher education system. The results for each dimension are as follows:

1. Curriculum: A sustainability score of 15.52 was obtained from the analysis. This indicates that even though sustainability courses are provided across a variety of subjects in HEIs, they don't meet the desired standard (24.1). Improvements to the curriculum are required to match it with sustainability objectives.

2. Operations: HEIs scored 14.24, much below the predicted 26.6. This shows that current energy conservation, waste reduction, and other operational sustainability practices fall short of expected norms. It is crucial to take steps like updating HVAC systems and encouraging resource efficiency.

3. Faculty and Staff Development: 4.95 instead of the anticipated 9.9 is the sustainability score for faculty and staff development. This shows that there is room for improvement in the ways that instructors recognize and encourage sustainability.

4. Outreach and Services: The outreach and services programmes promoting sustainability, both nationally and internationally, are not at the desired level within HEIs, as seen by the sustainability score of 5.6, which is below the anticipated 12.3 points.

5. Student Engagement: The score for student participation in sustainability efforts was 5.63, which was below the predicted 10.3. This emphasizes the requirement for improved awareness campaigns and student participation in sustainability initiatives.

6. Research and Scholarship: In contrast to expectations, sustainable research and scholarship received a score of 5.5 out of predicted 9.9. It is necessary to improve initiatives for sustainability-related research and transdisciplinary activities.

7. Planning and Administration: HEIs scored 2.95 out of a possible 6.3 for planning and administration sustainability, falling short of the mark. This shows that better administrative and planning support is required for sustainability programmes.

The detailed overview of sustainability score of HEIs for each criteria, its weight, factors, factor's weight, factor status and HEIs score is shown in Table 2.

Table 2
HEIs Sustainability Score

Criteria	Weight	Factors	Factors Weights	Factors Status	HEI Score	Total Sustainability Score
Curriculum	24.1	Sustainability focus in department education system	4.82	0.65	3.13	15.52
		Sustainability courses	4.82	0.63	3.04	
		Undergraduates' requirement to take sustainability courses	4.82	0.70	3.37	

Category		Item				
		Postgraduate requirement to take sustainability courses	4.82	0.73	3.52	
		Sustainability focused program	4.82	0.51	2.46	
Operations	26.6	Building construction and renovation, based on green design principles	2.95	0.51	1.5	14.24
		Energy conservation practices	2.95	0.61	1.8	
		Waste reduction practices	2.95	0.53	1.56	
		Recycling of solid waste	2.95	0.52	1.53	
		Water conservation practices	2.95	0.51	1.5	
		Sustainable food programs	2.95	0.50	1.48	
		Sustainable landscaping	2.95	0.66	1.95	
		Sustainability assessments	2.95	0.53	1.56	
		Green packaging and biodegradable and recyclable packing	2.95	0.46	1.36	
Faculty & Staff Development	9.9	Hiring and promotion of faculty members' contributions to sustainability	4.95	0.45	2.23	4.95
		Faculty and staff development opportunities regarding sustainability	4.95	0.55	2.72	
Student Engagements	10.9	Student Environmental Center	2.18	0.44	0.96	5.63
		Sustainable hostels	2.18	0.49	1.07	
		Job fairs and career counseling regarding sustainable enterprises	2.18	0.50	1.09	
		Student groups/committees involved in sustainability initiatives	2.18	0.54	1.18	
		Extra-curricular activities including seminars, workshops, etc. regarding sustainability	2.18	0.61	1.33	
Research & Scholarship	9.9	Faculty research in the area of sustainability	2.48	0.52	1.29	5.5
		Student research in the area of sustainability	2.48	0.55	1.36	
		Scholarships in various disciplines in the area of sustainability	2.48	0.46	1.14	
		Faculty members interest in teaching and research related to sustainability issues	2.48	0.69	1.71	
Outreach & Services	12.3	Sustainable development work through formal partnership	6.15	0.45	2.77	5.6
		Local sustainability-related community services and/or internship programs	6.15	0.46	2.83	
Administration Planning	6.3	Reflection of commitment to sustainability in formal statements	1.58	0.46	0.73	2.93
		Environmental Council/Committee	1.58	0.44	0.7	
		Institutional Declaration of Commitment to Sustainability/Environmental Responsibility and policies	1.58	0.44	0.7	
		Orientation programs on sustainability for faculty and staff	1.59	0.50	0.8	
	100		100		Total Score	**54.37**

These results highlight the necessity of strengthening sustainability initiatives inside HEIs, especially in terms of curriculum creation, operations, faculty and staff development, outreach, student engagement, research, and administrative planning. Effective actions can promote a more sustainable future for Pakistan's higher education system by helping HEIs align with the SDGs.

Sustainability Scores Variations in sustainability levels are revealed by comparing sustainability scores from various HEIs. While other HEIs scored 54.37, one general HEI received a total sustainability score of 51.94. These results indicate that sustainability within these institutions is at a standard level when measured against the computed expected value of 100. These results show that there is potential for development in sustainability among HEIs due to divergent viewpoints among different stakeholders.

Figure 3

Comparison of Sustainability Score
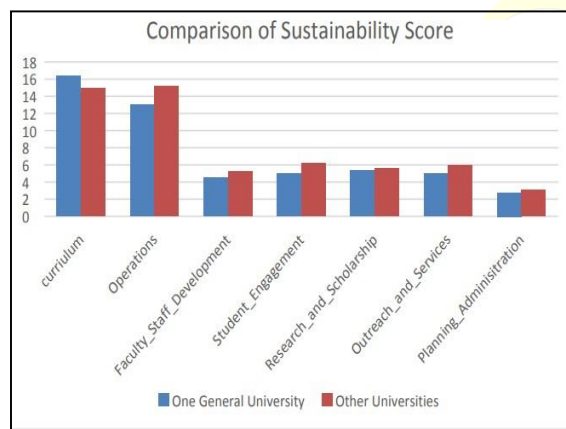
CONCLUSION AND RECOMMENDATION
The SDGs are of utmost importance, and it is crucial for HEIs to have performance indicators to gauge their sustainability contributions. This study has demonstrated that there is a direct correlation between HEI performance and the sustainable development indicators included in the literature. The study's practical ramifications mainly concern assisting Pakistani HEIs that are already keeping an eye on sustainability metrics. Universities and colleges play a crucial role in developing leaders who can spearhead sustainability initiatives. Their participation in sustainability efforts can encourage a societal transition towards a more sustainable future while increasing their own branding. They are known for their leadership in social and environmental causes.

The study's conclusions and the recently put out framework will help HEI management gauge their level of environmental sustainability at the moment and direct them in putting into practice corrective actions to repair weak areas. Institutions might also use it as a chance to modernize their procedures and techniques. The following are some of the main findings of this study: Sustainability in HEIs in Pakistan is still in its infancy, with little emphasis on sustainability practices and concepts. Certain dimensions, such as Outreach and Services, Student Engagement, and Administration and Planning, scored below average in terms of sustainability. These areas require significant attention. Curriculum, Operations, and Research and Scholarship all received scores that were slightly higher than average, showing improved performance in these areas. All things considered, HEIs need to put a lot of emphasis on all aspects of sustainability. By performing pair wise comparisons for the criteria components and conducting more surveys, future research in this area should attempt to improve and refine the sustainability evaluation framework. It would also be beneficial to expand this research to primary and secondary schools and colleges, as these establishments play a crucial role in influencing how young people engage with their environment and promote sustainability.

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