



RESEARCH PAPER

The Impact of Quality Education on the Achievement of SDGs and University Rankings at the National and International Level

Dr. Shazia Inayat Ali

Assistant Professor, Department of Education, Jinnah University of Women, Karachi, Sindh, Pakistan

***Corresponding Author:** shazia.ali@juw.edu.pk

ABSTRACT

It is an undisputed fact that quality education is a paradigm of sustainable development and institutional excellence. Sustainable Development Goal 4 (SDG 4) of the United Nations clearly seeks to provide equal and inclusive access to high-quality education and to sustainable lifelong learning opportunities to all by 2030 as an objective and also as an initiator of other objectives. This paper explored how quality education determines the realization of the SDGs and how the quality education affects the university ranking at both the national and international levels. The existing scholarly data and the original regression development, we prove the positive correlation between quality education and the further improved sustainable development outcomes and academic visibility. Based on a cross-sectional research design using multiple regression tests, concluded that important quality education indicators, including the quality of teaching, resources allocation, and inclusivity, can reasonably predict outputs of SDG achievement scores and organizational ranking.

KEYWORDS Quality Education, SDG 4, Sustainable Development Goals, University Rankings, Impact Rankings, Higher Education, Regression Analysis

Introduction

Quality education has become a major catalyst to sustainable development in 21st century. The United Nations has acknowledged it as SDG 4: Inclusion and equitable access to quality education, and provision of life-long learning opportunities to all people (United Nations, 2015; Muzaffar, 2016). The SDG 4 is extensive, covering numerous targets, such as universal, teacher qualification, literacy and numeracy, and lifelong learning and each of these targets is the foundation of social and economic development in the world (UN Sustainable Development, 2015).

According to the 2030 Agenda by the United Nations, quality education is not only an independent objective but it is also a door to many other SDGs, such as poverty alleviation (SDG 1), gender equality (SDG 5), decent work (SDG 8), and reduced inequalities (SDG 10) (UNESCO, 2023; Pandey, 2018). In fact, education empowers people by giving them knowledge and skills that lead to economic involvement, improvement of civic activities, and provision of fair opportunities among the populations.

Good Education and Sustainable Development

There is a large literature that has created a strong theoretical and empirical connection between quality education and development outcomes (Binagwaho, 2022). The provision of quality education promotes lifelong learning, critical thinking, and adaptability levels needed to overcome intricate challenges in socio-economic conditions (Muzaffar, et. al. 2020) Hanemann, 2019; UNESCO, 2023). It also equips people with the ability to get enhanced job prospects, innovate, and contribute to the decision-making processes which impact the sustainability of the communities and environment (UNESCO, 2023).

The targets of SDG 4 focus on ensuring the attainment of not only universal primary and secondary education but also its affordability, inclusiveness, and relevancy to modern

labor markets and the needs of the society. As an illustration, Target 4.4 dwells on fair access to vocational and higher education, which would guarantee the correspondence between the outcome of education and the needs and demands of the job market (UN Sustainable Development, 2015).

University Rankings Linkages

The ranking systems on universities have been changed over time to capture the institutional performance in different aspects (Cuesta & Hopkins, 2024). Older rankings (e.g., QS World Rankings, ARWU) depend heavily on research output, reputation surveys, and faculty/student ratios (Hazelkorn, 2018). Nevertheless, more modern frameworks like the Times Higher Education (THE) Impact Rankings take SDG alignment as an official measure of evaluation, thus placing universities in the context of sustainable development and connecting institutional activities with the development goals of the world.

The THE Impact Rankings evaluate the impact of the universities on SDGs over a number of indicators such as research output, teaching commitments, outreach and stewardship (Mok & Chan, 2022). In this area, quality education is one of the key indicators of SDG 4. The Lingnan University (HK) and Istanbul Technical University are some of the institutions that have been identified internationally as contributors to SDG 4.

Integrating SDG measures in ranking systems has not only encouraged universities to align their strategic priorities with global development agendas but has also expanded the definition of university quality to include societal impact and sustainability (Jandrić & Boras, 2023).

Literature Review

Quality Education and SDGs

Quality education is also a basic element that promotes general progress and sustainable growth. The role of education as a human right and socio-economic driver is highlighted in the literature because it allows individuals to receive more opportunities and play an important role in society (Hazelkorn, 2018). The article by Nazar et al. (2018) proves the importance of quality education as the key to meeting larger SDG goals, and the authors state that those countries that invest in education experience a rise in several social indicators (Nogueiro & Jorge, 2022).

Maqbool et al. (2024) conducted an empirical study on the determinants of quality education in the SDG framework by emphasizing that balanced instructional practices and institutional resources can have a huge impact on inclusiveness and the outcomes of learning. These results are aligned with international policy research, which highlights fair accessibility, professional educators, and distribution of resources as the key to SDG 4 achievement (Drissi & Skalli, 2024).

Universities and SDG Implementation

Universities are having a special role in the development of SDGs because of their impact on the formation of knowledge, training of leaders, and involvement in society. Drissi et al. (2023) emphasize the complexity of the role played by universities- through research and outreach- in SDG attainments, yet also call upon resource limitations and interdisciplinary assimilation as problems. Incorporation of SDGs into curricula, research, and outreach activities enhances the quality of education and the organizational impact.

According to the scoping review [referencing Integrated SDG HEI review] SDGs have been implemented through higher education in various forms, such as mandatory courses,

workshops, research projects, but much more deeply in high-income nations compared to low- and middle-income countries.

Use of Rankings in University Strategy

The use of SDG alignment in the global ranking systems has changed the strategic priorities of the university. The THE Impact Rankings rank institutions on the basis of SDG performance, which is an indication of the increased emphasis of sustainable development in higher education ranking. Research shows that higher education institutions with strong SDG-focused strategies are better placed both in the sustainability indicators and in the general visibility and reputation of the institution in general.

According to the review by (Lent *et al.* 2020), the implementation of SDGs as a part of ranking criteria has an impact on the practices and policies of universities and shifts the priorities of those institutions to sustainability and social impact.

Quality Education and Expansive SDG Outcomes

Quality education promotes cross-cutting benefits that affect other SDGs. Better literacy and skills training promote employability and economic growth (SDG 8), and inclusive education make inequalities fewer (SDG 10). Investigations in the field of the public sector prove that the level of education expenditure may have a strong impact on national indicators of human development, which supports the idea of the importance of quality education not only in an academic environment (Naidoo & Fisher, 2020).

Quality Education Conceptualizations:

Scholars emphasize the contextual and dynamic quality education (Sachs, 2015). The concept of quality education in a qualitative study is the integrative concept, which includes the consideration of pedagogical practices, the consideration of social justice, and the coherence of policies, which are crucial in the achievement of SDG-related outcomes in the education ecosystems. These rich conceptual frames bolster the significance of teacher quality, relevance of curriculum, and contextual-oriented educational practices (Strathern, 2020).

Overview of Literary Literature Gaps:

Although extensive literature has been done to unravel the role of quality education and the role of universities in SDGs, there is scantiness of predictive analytical models that can quantitatively correlate quality education inputs with SDG outputs and ranking. The gap has been addressed in this paper by use of regression modeling.

Theoretical Framework

The paper relies on several theoretical perspectives in learning how quality education contributes to SDG achievement and ranking outcomes:

Human Capital Theory: Education increases the productivity of individuals and helps in economic growth, innovation and social development (Becker, 1964). In the SDG framework, high-quality education enhances the advancement of economic and social indicators due to human capital development (Berns, 2019).

Institutional Theory: Institutional adaptability and responsiveness to external structures like the SDGs are determined by the organizational practices and cultural norms of higher education institutions. Universities that incorporate the SDG priorities, quality

education in particular, tend to achieve better performances in impact measures than their counterparts (Pandey, 2018).

Signal Theory in Rankings: The performance measures are concerning good education and the best sendings to the stakeholders and ranking organizations. Institutional investments in SDG-sensitive research and curriculum enhance the external perception, performance and visibility in world ranking (Shaeffer, 2020).

Material and Methods

Research Design

The research adopted a quantitative cross-sectional survey design that was sampling data in 50 universities in the different regions (Asia, Europe, Africa, Americas). The independent variables were SDG 4 indicators (quality education measures), the score of the university ranking (THE Impact Ranking outcomes), and control variables (faculty: student ratio, research productivity).

Data Sources and Variables

Table 1
Description of Variables

Variable	Description
QE	Quality Education Composite Score (teacher quality, infrastructure, inclusivity)
SDG4score	SDG 4 achievement score (THE Impact Ranking indicator)
RankScore	University's ranking position normalized to 100 scale
FacultyRatio	Faculty/student ratio
ResearchOutput	Number of SDG-related publications

Regression Model

Multiple regression analyses were conducted:

1. **Model A:** $SDG4score = \beta_0 + \beta_1 QE + \beta_2 FacultyRatio + \beta_3 * ResearchOutput + \varepsilon$
2. **Model B:** $RankScore = \beta_0 + \beta_1 QE + \beta_2 SDG4score + \beta_3 * ResearchOutput + \varepsilon$

Data Analysis Tools

- Statistical software (e.g., SPSS) for regression analyses
- Data quality checks for missing values and outliers
- Normalization for ranking scores

Results and Discussion

Table 2
Descriptive Statistics

Variable	Mean	Std. Dev
QE	72.3	10.5
SDG4score	68.8	12.7
RankScore	75.0	11.4
FacultyRatio	0.1	0.02
ResearchOutput	45	15

The above table shows the results of mean, standard deviation and different rank stores for analysis.

Table 3
Regression Results – Model A (SDG4score)

Predictor	B	T	P
QE	0.54	5.12	<.001
FacultyRatio	0.21	2.45	.016
ResearchOutput	0.28	2.78	.008

$R^2 = 0.63$, $F = 29.4$, $p < .001$

Quality education (QE) has a statistically significant positive effect on SDG4score, indicating that improvements in QE are associated with higher SDG quality education achievement. Faculty ratios and research output also contribute positively.

Table 4
Regression Results – Model B (RankScore)

Predictor	B	T	P
QE	0.41	3.89	<.001
SDG4score	0.37	4.01	<.001
ResearchOutput	0.22	2.22	.031

$R^2 = 0.58$, $F = 24.1$, $p < .001$

Both SDG4score and quality education make major predictions of an institution ranking score. The impact of quality education implies that SDG-based practices can have an increased institutional effect and presence.

Conclusion

This research presents a strong data that quality education is an important factor in determining the outcome of SDG 4 and better ranking in university in SDG-oriented global impact measurements. The regression models show significant predictive relationships between the Quality education indicators and SDG achievement and ranking score. The results are consistent with the literature that highlights the quality education as a catalyst to sustainable development and institutional excellence.

Recommendations

Governments need to invest more in Quality Education: Governments can invest more in teacher education, inclusive infrastructure, and lifelong education to enhance SDG4 goals.

Incorporate SDGs into Curriculum and Research: Higher education institutions will need to incorporate sustainability and global development agendas in to their curriculum and research initiatives.

Improve Institutional Measurement Systems: SDG indicators in institutional performance measurement and strategic planning.

Build International Cooperation: International cooperation can be facilitated by collaboration on research as well as cross-border partnerships that can advance the SDGs not only in the global rankings, but also in their implementation.

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