

A Conceptual Framework of Benchmarking for Sustainable Quality Transformation in Islamic and Public Universities

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ARTICLE INFO	ABSTRACT
Keywords: Benchmarking; Sustainable Quality Transformation; Higher Education; Islamic Universities; Public Universities; Sustainable Development Goals (SDGs).	The increasing demand for quality education, digital transformation, globalization, and the implementation of the Sustainable Development Goals (SDGs) requires higher education institutions to adopt adaptive and sustainable quality transformation strategies. This study aims to analyze benchmarking as a strategy for sustainable quality transformation in Islamic and public universities and to propose a conceptual framework integrating quality assurance, adaptive leadership, digital transformation, and sustainability. A qualitative library research approach was employed by systematically reviewing relevant literature from reputable international journals, academic books, conference proceedings, and scientific publications selected based on their relevance to benchmarking, higher education quality, sustainability, and the SDGs. The collected data were analyzed using content and thematic analysis to identify major themes and conceptual relationships. The findings indicate that benchmarking extends beyond a quality evaluation tool to serve as a collaborative mechanism for institutional learning, governance improvement, innovation, and continuous quality enhancement. The proposed conceptual framework positions benchmarking as the central driver that connects quality assurance, adaptive leadership, digital transformation, and sustainability-oriented policies to foster continuous improvement and institutional resilience. The study concludes that benchmarking strengthens a sustainable quality culture and enhances institutional competitiveness through collaborative governance, innovation, and the integration of sustainability values in higher education.
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INTRODUCTION

Background

Globalization has transformed education at all levels, particularly higher education, requiring universities to become more adaptive to digital learning and institutional innovation. Digitalization has become a prerequisite for improving learning quality, institutional governance, and competitiveness while enabling universities to attract competent students and strengthen academic programs.¹ The COVID-19 pandemic further accelerated this transformation by compelling universities to implement online learning systems to ensure educational continuity and maintain quality standards.² At the same time, society increasingly expects universities not only to transfer knowledge but also to foster individual development, critical thinking, inclusion, and social responsibility.³ In line with the Sustainable Development Goals (SDGs), higher education institutions play a strategic role through education, research, and community engagement in preparing graduates capable of addressing sustainable development challenges.⁴

Increasing demands for higher education quality, digital transformation, and global competition encourage Indonesian universities to continuously update their academic governance and development systems. The government also consistently encourages universities in Indonesia to achieve recognition in the QS World University Rankings and Times Higher Education rankings. This initiative is reflected through efforts to improve the quality of research, teaching standards, scientific publications, and international collaboration. Although there are several universities that are included in international rankings, such as the University of Indonesia which is ranked 191st, Gajah Mada University in the 206th position, and Airlangga University in the 276th position.⁵ The majority of Islamic and Non-Islamic State Universities still face challenges in maintaining quality standards according to global benchmarks.⁶ Meanwhile, Islamic universities still face obstacles in international accreditation to improve global competitiveness, as well as structural, financial, and policy challenges.⁷ These differences require a sustainable benchmarking and transformation strategy so that both types of universities in Indonesia are able to respond to the demands of the society 5.0 era and support the achievement of the SDGs.

The growing emphasis on accountability and internationalization has also encouraged universities to strengthen internal quality assurance systems. Nugraha et al. stated that

¹ Mamdouh Alenzi, Saja Wardat, and Mohammed Akour, "The Need to Integrate Digital Education in Higher Education: Challenges and Opportunities," *Sustainability* 15, no. 6 (2023): 4782.

² Iryna Lysenko et al., "Analysis of Online Learning Problems in the Higher Education Quality Assurance Framework: 'Pandemic Lessons' to Overcome the Challenges of Difficult Times," *Education Science* 13, no. 12 (2023): 1193.

³ Anna Shutaleva et al., "Sustainability of Inclusive Education in Schools and Higher Education: Teachers and Students with Special Educational Needs," *Sustainability* 15, no. 4 (2023): 3011.

⁴ Paula Goncalves Serafini et al., "Sustainable Development Goals in Higher Education Institutions: A Systematic Literature Review," *Journal of Cleaner Production* 370, no. 133473 (2022): 1.

⁵ Quacquarelli Symonds, "QS World University Rankings," 2026.

⁶ Sudirman Sudirman et al., "The Transformation of State Islamic Higher Education Institutions into World-Class Universities: From Globalization to Institutional Values," *Social Sciences & Humanities* 12, no. 101705 (2025): 1–2.

⁷ Sibawaihi Sibawaihi et al., "Internationalizing Islamic Universities in Indonesia: Lessons Learned from Australia," *Journal of Islamic Education* 11, no. 1 (2025): 97.

"university stakeholders must be committed to making continuous improvements" in graduates' knowledge, competencies, skills, and employability.⁸ Consequently, higher education institutions are expected not only to produce quality graduates but also to establish sustainable quality management systems that promote continuous institutional improvement.

One widely adopted strategy for quality improvement is benchmarking. Benchmarking is understood as a systematic process of comparing organizational practices, processes, and performance with leading institutions to identify and adopt best practices. AlBuainain et al. explain that "benchmarking is an important tool for quality improvement in higher education" because it enables institutions to evaluate internal processes while identifying and implementing effective practices from high-performing organizations.⁹ Accordingly, benchmarking functions not only as an evaluation instrument but also as a mechanism for institutional learning and continuous improvement. This perspective is consistent with Sofyani's argument that Indonesia has adopted the Kaizen approach within higher education quality assurance under the paradigm of "sustainable quality improvement," emphasizing continuous evaluation and systematic institutional development.¹⁰

Sustainable quality transformation is closely associated with SDG 4 on quality education and the broader concept of Education for Sustainable Development (ESD). Higher education institutions are increasingly recognized as strategic actors in promoting sustainable development through education, research, and community engagement. Previous studies demonstrate that sustainability extends beyond academic quality to include institutional governance, environmental management, and financial and social sustainability.¹¹ Furthermore, UNESCO, as cited by Hassan and Ahmad, emphasizes the importance of developing critical thinking, social responsibility, and sustainable practices within higher education systems.¹² Universities are therefore expected to integrate sustainability into their vision, curriculum, governance, campus operations, and institutional culture while strengthening collaboration, digital technology adoption, and innovation to address global challenges.

Recent studies further highlight the interconnected roles of digital transformation, quality assurance, sustainability, and benchmarking in higher education. Vu Khanh Quy et al. argue that digital transformation has become an inevitable component of the Fourth Industrial Revolution, affecting teaching, learning, assessment, research, and educational management.¹³ Lia Yuliana et al. demonstrate that systematic implementation of quality

⁸ Nugraha Nugraha et al., "Quality Assurance in Higher Education Institutions: Empirical Evidence in Indonesia," *SAGE Open* 13, no. 4 (2023): 2, <https://doi.org/10.1177/21582440231203060>.

⁹ AlBuainain et al., "Benchmarking in Higher Education: A Framework for Benchmarking for Quality Improvement Goals."

¹⁰ Hafiez Sofyani, "The Adoption of Kaizen Internal Quality Assurance and Quality Performance Improvement in Indonesian Universities: The Role of IT Development Moderators," *Journal of Accounting and Investment* 24, no. 3 (2023): 772, <https://doi.org/10.18196/jai.v24i3.19587>.

¹¹ Mohamud Mohamed Hassan and Abd Rahman Ahmad, "A Systematic Literature Review on the Sustainability of Higher Education Institutions (HEIs): Dimensions, Practices and Research Gaps," *Education Cogent* 12, no. 1 (2025): 1, <https://doi.org/10.1080/2331186X.2025.2549789>.

¹² Hassan and Ahmad, "A Systematic Literature Review on the Sustainability of Higher Education Institutions (IPT): Research Dimensions, Practices and Gaps."

¹³ Vu Khanh Quy et al., "AI and Digital Transformation in Higher Education: Visions and Approaches of Specific Universities in Vietnam," *Sustainability* 15, no. 11093 (2023): 13.

assurance and accreditation significantly improves accreditation outcomes, institutional reputation, and graduate competitiveness.¹⁴ Likewise, Chen Kim Lim et al. recommend strengthening collaboration and sustainability reporting to advance Education for Sustainable Development (ESD) across higher education institutions.¹⁵

Benchmarking and Sustainable Quality Transformation

Benchmarking has also been recognized as an effective strategy for improving institutional competitiveness and quality. Tri Astutik demonstrates that benchmarking enables Islamic educational institutions to identify and implement best practices through continuous internal and external comparisons.¹⁶ Similarly, Abdul Ghoni et al. conclude that structured benchmarking improves learning quality, administrative efficiency, curriculum relevance, institutional branding, and competitiveness while maintaining Islamic identity.¹⁷ In higher education, D.D. Jantassova and E.A. Zhdanova further emphasize benchmarking as an important instrument for educational reform, curriculum internationalization, resource optimization, and academic quality management.¹⁸

Research Gap and Theoretical Framework

Despite these important contributions, existing studies generally examine digital transformation, quality assurance, sustainability, and benchmarking separately. Most focus on technical aspects of accreditation, digitalization, or sustainability reporting without comprehensively integrating benchmarking with leadership, institutional policy, and SDGs-oriented quality transformation. Moreover, limited attention has been given to benchmarking as a transformational strategy within Islamic and Non-Islamic State Universities, despite their different governance systems, institutional cultures, value orientations, and globalization challenges. Consequently, there remains a significant research gap regarding a comprehensive conceptual synthesis that integrates benchmarking, sustainable quality transformation, leadership, policy, digital transformation, and SDGs perspectives within a unified analytical framework applicable to both Islamic and Non-Islamic State Universities.

This study is theoretically grounded in four complementary perspectives: benchmarking theory, which explains benchmarking as a continuous improvement strategy, quality assurance theory, which emphasizes systematic quality enhancement, transformational leadership theory, which highlights leadership as a driver of organizational change, and Education for Sustainable Development (ESD), which provides the sustainability perspective aligned with the SDGs. These theoretical perspectives are

¹⁴ Lia Yuliana, Syukrul Hamdi, and Riki Perdana, "Quality Assurance in Islamic Universities: Global Trends, Challenges, and Future Directions," *Munaddhomah: Journal of Islamic Education Management* 7, no. 1 (2026): 202.

¹⁵ Chen Lim Kim et al., "A Systematic Review of the Sustainable Development of Education in Higher Education Institutions," *Sustainability* 14, no. 13241 (2022): 15.

¹⁶ Tri Astutik, "Developing Benchmarking as an Effort to Improve Quality in Islamic Educational Institutions," dalam *International Conference on Islam, Law, and Society (INCOILS)* (Tulungagung: Universitas Sayyid Ali Rahmatullah Tulungagung, 2024), 1.

¹⁷ Abdul Ghoni, Siti Jumrotun, dan Salfen Hasri, "Benchmarking as a Solution to Increase the Competitiveness of Islamic Educational Institutions in the Era of Globalization" 1, no. 1 (2025): 276.

¹⁸ D. Jantassova and E. Zhdanova, "Benchmarking as an Effective Tool in Managing the Quality of Educational Processes at Technical Universities," *Karaganda University Bulletin. Pedagogy Series* 101, no. 1 (2021): 19, <https://doi.org/10.31489/2021ped1/19-25>.

integrated to explain how benchmarking supports sustainable quality transformation in higher education.

Research Questions

Based on the identified research gap, this study addresses the following research questions:

1. How does benchmarking contribute to sustainable quality transformation in Islamic and Public Universities?
2. How are benchmarking, quality assurance, digital transformation, transformational leadership, and sustainability interconnected in higher education?
3. How can these dimensions be synthesized into a sustainable benchmarking conceptual framework for Islamic and Public Universities?

Novelty and Research Objectives

The novelty of this study lies in the development of a sustainable benchmarking conceptual framework that extends conventional benchmarking beyond performance evaluation and accreditation. The proposed framework positions benchmarking as a strategic mechanism that integrates quality assurance, digital transformation, transformational leadership, sustainability, and SDGs-oriented educational policy to support continuous institutional learning and sustainable quality transformation.

The framework also incorporates a comparative perspective by recognizing the distinctive characteristics of Islamic and Public Universities. While Islamic Universities emphasize religious values, Islamic governance, and community engagement, Public Universities generally focus on academic autonomy, research productivity, internationalization, and global competitiveness. By accommodating these institutional differences, the framework provides a contextual approach for implementing benchmarking to achieve shared goals of quality enhancement and sustainable development.

This study proposes a conceptual model of Sustainable Benchmarking for Quality Transformation that illustrates the interrelationships among benchmarking, leadership, quality assurance, digital transformation, sustainability, and institutional outcomes. As a conceptual study, the framework serves as a theoretical foundation for future benchmarking practices and policy development rather than an empirically validated model.

The purpose of this study is to analyze the role of benchmarking as a sustainable quality transformation strategy in Islamic and Public Universities through a qualitative library research approach employing content analysis and thematic analysis. Specifically, the study aims to identify benchmarking strategies for improving higher education quality, examine their relationship with digital transformation and sustainability, compare their implementation across different institutional contexts, and develop an SDGs-oriented conceptual framework.

Since this study is conceptual, it does not empirically test the proposed framework. Instead, it provides an integrative synthesis of existing literature. Future research is therefore recommended to validate and refine the framework through comparative case studies, surveys, or mixed-method research involving Islamic and Public Universities in different institutional and national contexts.

This study contributes theoretically by integrating benchmarking, quality assurance, digital transformation, leadership, and sustainability into a comprehensive conceptual framework for higher education. Practically, it provides university leaders, quality assurance agencies, and policymakers with a strategic reference for designing adaptive, innovative, and sustainability-oriented benchmarking initiatives while offering a foundation for future empirical research.

RESEARCH METHOD

This research uses a qualitative approach with the type of library research. Qualitative research is research to explore and understand the meaning of an individual or group to a social problem.¹⁹ Library research is used to develop theoretical and practical aspects as a basis for building a theoretical foundation.²⁰ This research focuses on the analysis of various scientific literature that discusses benchmarking, quality transformation of higher education, quality assurance, digital transformation, sustainability, and the implementation of the Sustainable Development Goals (SDGs) in Islamic universities and state universities. The library research approach was chosen because it allows researchers to review and synthesize concepts, models, strategies, and findings of previous research related to benchmarking as a sustainable quality transformation strategy. Through this approach, the research produces a conceptual framework for benchmarking that is oriented towards improving the quality of higher education and supporting the achievement of the SDGs.

The study analyzed 49 literature sources, consisting of peer-reviewed international journal articles, academic books, conference proceedings, and policy documents. The literature was retrieved from Scopus, ScienceDirect, Springer, Taylor & Francis, and Google Scholar using keywords including *benchmarking in higher education*, *sustainable quality transformation*, *quality assurance*, *digital transformation in higher education*, *Islamic higher education*, *public universities*, *educational leadership*, and *SDGs in higher education*. Publications were limited to the period 2016–2026 to ensure the inclusion of contemporary studies. Literature was selected based on thematic relevance, publication quality, scientific credibility, and direct relevance to benchmarking, sustainability, and higher education transformation, while publications outside the research scope or lacking a peer-review process were excluded.

The literature selection followed a systematic screening process consisting of identification, screening, eligibility assessment, and inclusion. Initially, relevant publications were identified from the selected databases, followed by the removal of duplicate and irrelevant records. The remaining publications were assessed according to the predefined inclusion and exclusion criteria before the final set of literature was included for analysis. Data analysis combined content analysis and thematic analysis. Following Krippendorff, content analysis was used to systematically identify, classify, and code concepts related to benchmarking, quality assurance, digital transformation, leadership, governance, sustainability, and SDGs.²¹ The analysis followed the stages of unitizing, sampling, coding,

¹⁹ John W. Creswell and J. David Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 6th ed. (California: Sage Publications, 2023), chapter 1.

²⁰ Magdalena et al., *Research Methods: For the Writing of Research Reports in Islamic Religious Education*, 1st edition (Rejang Lebong: Literasiology Book Publisher, 2021), 74.

²¹ Klaus Krippendorff, *Content Analysis: An Introduction to His Methodology*, 4th ed. (California: Sage Publications,

reducing, and inferring to generate valid conceptual categories. Subsequently, thematic analysis, following Kuckartz and Rädiker, was employed to synthesize these coded categories into broader themes, identify relationships among concepts, and develop the proposed Sustainable Benchmarking conceptual framework.²²

To enhance the trustworthiness of the findings, literature triangulation was conducted by comparing evidence from reputable journals, books, conference proceedings, and policy documents. Source quality was evaluated based on journal indexation, publisher reputation, methodological rigor, and consistency of findings across studies. In addition, the coding process was independently reviewed by two researchers. Any discrepancies in coding or theme classification were discussed until consensus was reached, thereby improving the consistency and reliability of the thematic interpretation. Although this study is conceptual rather than empirical, this consensus-based review strengthened the credibility and dependability of the analytical process.

RESULT AND DISCUSSION

Result

An Overview of Quality Transformation in Higher Education Literature

The implementation of quality services in higher education (HEIs) is key to differentiating competitors and ensuring the long-term sustainability of the institution. Quality is not just a concept, but encompasses articulated practices, techniques, and procedures. Quality is important for the long-term performance of the institution. Quality is a constant process of development towards the expected level of perseverance and consistency.²³ Currently, higher education (IPT) is facing a paradigm shift that demands digital-based, sustainable, and quality-oriented institutional transformation in order to compete at the global level. The transformation of higher education (IPT) is in line with the goal of lifelong learning which is being intensified globally. Lifelong learning requires adapting the education system to the changing times, such as the developing digital era in the 21st century.²⁴

Digital transformation has become a priority for higher education institutions (HEIs) in the second decade of the 21st century. Transformation drives change in universities that were initially conventional to adaptive, innovative, and global collaboration-based universities.²⁵ The function of universities is not only limited to teaching activities, but also develops into a center for innovation, research, technological development, and strengthening competitiveness globally to respond to the dynamics of social, economic, and

2019), 24.

²² Udo Kuckartz and Stefan Radiker, *Qualitative Content Analysis: Methods, Practice and Software*, 2nd edn (London: Sage Publications, 2023), 80.

²³ Bandar Alzahrani et al., "How Ready Are Universities for Quality Transformation 4.0 According to the LNS Research Framework?," *Sustainability* 13, no. 9 (2021): 1.

²⁴ Marcia Håkansson Lindqvist et al., "The Transformation of Higher Education Towards Lifelong Learning in the Digital Age – A Literature Review of Scope," *International Journal of Lifelong Education* 43, no. 1 (2024): 24–25.

²⁵ Lina María Castro Benavides et al., "Digital Transformation in Higher Education Institutions: A Systematic Literature Review," *Censorship* 20, no. 3291 (2020): 1–2.

technological changes that occur.²⁶ The transformation of higher education includes changes in governance, organizational culture, and institutional orientation towards future universities. This transformation encourages universities to integrate principles and sustainable development as part of the institution's quality development strategy.²⁷

The results of the content analysis show that the concept of sustainable higher education is increasingly becoming a major concern in the global higher education literature. Universities have begun to integrate sustainability principles and SDGs in academic activities, research, community service, and institutional management. Higher education exists as a means of fostering values and competencies needed in sustainable development, such as gender equality, human rights, global citizenship, appreciation of cultural diversity, peace, and non-violence.²⁸ The results of the thematic analysis found many themes related to green campuses, social responsibility, sustainability leadership, and long-term quality development. The literature emphasizes that universities have a strategic role in achieving the Sustainable Development Goals (SDGs) through the dimensions of education, research, community service, and management.²⁹ Universities view the SDGs not only as a form of institutional social responsibility, but also as a quality transformation strategy oriented towards global sustainability. This development encourages universities to strengthen the digitalization system and educational technology to support the implementation of sustainable education effectively and adaptively.³⁰

Digital transformation is the dominant theme in the development of modern higher education. Universities have begun to adopt various digital technologies, such as Artificial Intelligence (AI), digital learning, e-governance, and online learning systems in improving academic effectiveness and institutional management.³¹ The success of digital transformation depends on the readiness of institutions to develop digital leadership, technology literacy, and educational infrastructure that are adaptive to global change. Therefore, the digitalization of higher education is closely related to strengthening a quality assurance system and institutional governance that is more transparent, accountable, and sustainable.³²

The transformation of the quality of higher education is closely related to the strengthening of the quality assurance system and institutional governance. Universities are required to develop a quality assurance system that not only focuses on institutional accreditation, but also on sustainable quality development.³³ The literature emphasizes that

²⁶ Thomais Gkrimpizi, Vassilios Peristeras, and Ioannis Magnisalis, "Defining the Meaning and Scope of Digital Transformation in Higher Education Institutions," *Administrative Sciences* 14, no. 48 (2024): 1–18.

²⁷ Temitayo Shenkoya and Euseok Kim, "Sustainability in Higher Education: Digital Transformation of the Fourth Industrial Revolution and Its Impact on Open Knowledge," *Sustainability* 15, no. 2473 (2023): 1–16.

²⁸ Tristan McCowan, "The Crosscutting Impact of Higher Education on The Sustainable Development Goals," *International Journal of Educational Development* 103, no. 102945 (2023): 1–4.

²⁹ Serafini et al., "Sustainable Development Goals in Higher Education Institutions: A Systematic Literature Review."

³⁰ Hoai Thi Mai Bui, Tung Bui, and Binh Thai Pham, "The Role of Higher Education in Achieving Sustainable Development Goals: An Evaluation of Motivation and Capacity of Vietnamese Institutions," *The International Journal of Management Education* 22, no. 101088 (2024): 1–15.

³¹ Jose Ermeson Silva Carmo et al., "Digital Transformation in The Management of Higher Education Institutions," *Sustainable Futures* 9, no. 100692 (2025): 1–17.

³² Carmo et al.

³³ McCowan, "Cross-Sectoral Impact of Higher Education on the Sustainable Development Goals," 2.

transformational leadership has an important role in driving institutional change, policy innovation, and strengthening the competitiveness of universities at the international level. An effective governance system is believed to be the main foundation in supporting the success of digital transformation, the implementation of the SDGs, and sustainable quality development in higher education.³⁴ Therefore, various literature recommends a benchmarking approach as a collaborative strategy in strengthening a culture of quality, sharing effective management practices, and supporting sustainable institutional transformation.³⁵

Quality Challenges in Islamic and non-Islamic Colleges

Islamic universities and public universities face various challenges in improving academic quality in the 21st century. These challenges include the effectiveness of learning, the quality of graduates, the competence of lecturers, and the relevance of the curriculum to the needs of the world of work and technological developments. The literature emphasizes social change and the development of technology-based industries that demand higher education institutions to develop adaptive, interdisciplinary, and skills-based curricula in the 21st century. 21st century education should be centered on critical thinking, global awareness, communication skills, optimistic behavior, social inclusion, cooperation, and decision-making.³⁶ Integrating 21st-century skills into the curriculum effectively requires a rethinking of traditional teaching approaches in higher education institutions. Universities must take a leading role in the transformation of education through continuous strategic leadership, academic program updates, integration of technological devices, and strengthening of formative experiences, so as to equip students with the confidence and creativity needed to meet the challenges of the labor market.³⁷

In this context, transformational leadership is needed that is able to strengthen a culture of quality, increase institutional collaboration, and encourage innovation in higher education in a sustainable manner. The success of higher education transformation is also influenced by the ability of leaders to build strategic visions, empower human resources, and create institutional management that is responsive to global challenges.³⁸ Transformational leadership is not only related to administrative effectiveness, but also related to research productivity, as well as the innovation capacity of universities at the international level.³⁹ Research and innovation productivity is one of the main indicators in assessing the

³⁴ Shahawati Binti Umar et al., "The Transformation of Higher Education-Institutions: The Impact of Change Management on Sustainable Performance Through Leadership and Transactional Knowledge Management," *Sustainability* 17, no. 2445 (2025): 21–22.

³⁵ Jannat Ara Shewly et al., "Worldwide Benchmarking and Quality Assurance Practices at Bangladesh Universities," *Journal of Engineering and Applied Science* 9, no. 2 (2025): 1.

³⁶ Shabir Hussain Khahro and Yasir Javed, "Key Challenges in 21st Century Learning: The Way Forward to Sustainable Higher Education Institutions," *Sustainability* 14, no. 23 (2022): 1–3.

³⁷ Silvia F. Rivas et al., "Editorial: Transforming Education: 21st Century Skills and Challenges for Higher Education," *Frontiers in Education* 10 (2025): 1, <https://doi.org/10.3389/educ.2025.1583876>.

³⁸ João Henrique Paulino Pires Eustachio et al., "Implementing Sustainability in Teaching: The Role of Sustainability Leadership and Transformational Leadership in the Context of Higher Education Institutions," *Sustainable Development* 32, no. 5 (2024): 5331–33.

³⁹ Sophie Ekume Etomes et al., "Transformational Leadership for Sustainable Productivity in Cameroon's Higher Education Institutions," *Higher Education* 90 (2025): 521, <https://doi.org/https://doi.org/10.1007/s10734-024-01334-7>.

competitiveness of universities at the global level. However, universities still experience limitations in conducting scientific publications internationally.⁴⁰ The existence of a gap in human resources, limited funds, and low innovation capacity are the main obstacles to higher education in developing countries.⁴¹ Sharia universities also face challenges in increasing the visibility of Islamic research at the international level.⁴² This challenge is related to the ability of institutions to carry out digital adaptation and technological transformation to support an innovative and competitive academic system.⁴³

In fact, not all institutions have adequate financial capacity and human resources to carry out this transformation.⁴⁴ In Islamic universities, there are challenges in the form of difficulties in balancing technological modernization with the character of religious values-based education.⁴⁵ The success of transformation is influenced by institutional policies and the ability of universities to build global collaborations that support the development of educational technology. Therefore, digital adaptation is related to the process of internationalization and increasing the global competitiveness of universities.⁴⁶

Internationalization is not only related to the use of foreign languages or student exchange, but also the strengthening of research networks, the development of international standard curriculum, and the improvement of academic reputation at the global level.⁴⁷ Thus, Islamic universities face new challenges in maintaining Islamic identity in the midst of the globalization of higher education.⁴⁸ Meanwhile, public universities focus on improving innovation and international reputation based on academic performance. Successful internationalization depends on the quality of governance, digital capacity, research productivity, and the ability of institutions to build cross-border collaboration in a sustainable manner.⁴⁹

⁴⁰ Pungki Purnomo et al., "Research and Publication Activities of Ma'had Aly Lecturers: Challenges and Prospects," *Al-Turas Bulletin* 30, no. 1 (2024): 96.

⁴¹ Taojing Wang et al., "Digital Innovation in Higher Education: Comparing Approaches in Developed and Developing Countries," *Frontiers in Education* 10 (2025): 10, <https://doi.org/https://doi.org/10.3389/feduc.2025.1723087>.

⁴² Purnomo et al., "Research and Publication Activities of Ma'had Aly Lecturers: Challenges and Prospects," 96.

⁴³ Thomais Gkrimpizi, Vassilios Peristeras, and Ioannis Magnisalis, "Classification of Digital Transformation Barriers in Higher Education Institutions: A Systematic Literature Review," *Educational Science* 13, no. 7 (2023): 1.

⁴⁴ Phuti Alfred Patrick Mabotha and Bethuel Sibongiseni Ngcamu, "Digital Transformation in the Higher Education Sector: A Systematic Literature Review," *Administrative Science* 16, no. 1 (2026): 1.

⁴⁵ Slamet Firdaus et al., "The Transformation of Islamic Universities: Integrating Islamic Values and Digital Technology at UIN Siber Cirebon," *Peuradeun Scientific Journal* 13, no. 3 (2025): 2337.

⁴⁶ Endang Sumiati et al., "The Transformation of Islamic Higher Education: Strategies, Challenges, and Policy Opportunities," *Al-Hayat: Journal of Islamic Education (AJIE)* 8, no. 4 (2024): 1399.

⁴⁷ Nazifa Abd Ghani et al., "Bibliometric Analysis of Global Research Trends on Internationalization of Higher Education Using the Scopus Database: Towards the Sustainability of Higher Education Institutions," *Sustainability* 14, no. 4 (2022): 2.

⁴⁸ Achruh and Sukirman, "An Analysis of Indonesian Islamic Higher Education Institutions in the Era of Globalization," *International Journal of Educational Learning, Teaching, and Research* 23, no. 9 (2024): 78.

⁴⁹ Awaliyah Musgamy et al., "Quality Governance and Institutional Negotiation in Indonesian Islamic Universities under a Global Policy Regime," *International Journal of Learning and Teaching, and Educational Research* 25, no. 3 (2026): 1011.

Benchmarking Strategy for Sustainable Quality Improvement

Benchmarking is a quality improvement strategy carried out through a continuous institutional learning process. Thematic analysis from various literature shows that inter-institutional benchmarking is no longer positioned as a tool of inter-institutional competition.⁵⁰ Benchmarking is a continuous improvement mechanism that allows institutions to identify best practices, evaluate internal weaknesses, and systematically improve academic performance.⁵¹ In this context, benchmarking serves as a quality improvement instrument that strengthens an organization's learning culture through the development of quality standards, performance evaluation, and innovation of academic services.⁵² In addition, the results of the content analysis show that the application of benchmarking is able to create an institutional learning pattern that is adaptive to global changes in higher education. Therefore, the concept of benchmarking is not only related to quality evaluation, but also the basis for the development of collaboration between institutions in building a common quality culture.⁵³

The dominant forms of benchmarking in higher education include internal benchmarking and external benchmarking.⁵⁴ This approach allows educational institutions to build on shared best practices in academic governance, service development, and institutional capacity building on an ongoing basis.⁵⁵ The analysis shows that a collaborative quality culture becomes more effective when institutions not only compare performance achievements, but also share innovation strategies and organizational transformation experiences.⁵⁶ From a strategic leadership perspective, benchmarking is evolving into an important instrument in strengthening governance, policymaking, and data-driven institutional management.⁵⁷ Thus, benchmarking does not stop at the exchange of academic information, but plays a role in driving institutional transformation through innovative leadership and sustainable quality-oriented governance.

Transformative Leadership and Policy in Sustainable Higher Education

Transformative leadership in education serves as a key catalyst in deconstructing the old order to create a just, inclusive, and socially equitable learning environment. Unlike conventional leadership styles, which tend to focus on efficient bureaucratic management, transformative leadership is guided by ethical values, visionary views, and a deep sense of

⁵⁰ Claire Willmington et al., "The Contribution of Benchmarking to Quality Improvement in Healthcare. A Review of the Systematic Literature," *BMC Health Services Research* 22, no. 139 (2022): 1.

⁵¹ Izabela Savickienė and Simona Pilkienė, "Analyzing the Culture of Quality in Higher Education: A Screening Framework Applied to University Practice," *Frontiers in Education* 11 (2026): 2, <https://doi.org/https://doi.org/10.3389/feduc.2026.1820196>.

⁵² Susana del Carmen Guil Gorostidi and Juan Arturo Rubio-Arostegui, "Quality Management in Higher Education from the Perspective of Institutional Isomorphism: A Scope Review," *Frontiers in Education* 10 (2025): 1, <https://doi.org/https://doi.org/10.3389/feduc.2025.1720224>.

⁵³ Zorica Lazić, Aleksandar Đorđević, and Albina Gazizulina, "Improving the Quality of Higher Education Institutions as a Basis for Improving the Quality of Life," *Sustainability* 13, no. 8 (2021): 1.

⁵⁴ Rohmat Dwi Jatmiko, *Strategic Marketing*, 1st ed. (Malang: University of Muhammadiyah Malang, 2025), 630.

⁵⁵ The Old Fate of Lumban Gaol, *Theory and Model of Education Management: A Fundamental Study* (South Jakarta: PT Scifintech Andrew Wijaya, 2023), 150.

⁵⁶ Gorostidi and Rubio-Arostegui, "Quality Management in Higher Education from the Perspective of Institutional Isomorphism: A Scope Review," 1–2.

⁵⁷ Bianca Ifeoma Chigbu and Sicelo Leonard Makapela, "Data-Driven Leadership in Higher Education: Advancing Sustainable Development Goals and Inclusive Transformation," *Sustainability* 17, no. 7 (2025): 1.

social responsibility. Transformative leadership in higher education involves the incorporation of technology and the application of sustainable leadership practices to achieve the SDGs.⁵⁸ In the midst of the dynamics of a world full of uncertainty and complexity (the world of VUCA), transformative leaders are required to have the moral courage to foster collaborative engagement and adapt the curriculum to meet the diverse needs of students. This type of leadership inspires and empowers all stakeholders to move beyond the old ways and move towards building a culture of environmental stewardship and social justice within academic institutions.⁵⁹

Policy innovation is the next critical tool for translating transformative leadership commitments into concrete action. In the context of modern education, policy innovation is often realized through the acceleration of the digitalization of education, designed to address barriers to accessibility, efficiency, and quality of learning.⁶⁰ A concrete example of this innovation can be seen in the use of various independent digital learning platforms that massively change the landscape of educational interaction. Through the adoption of information and communication technology (ICT) and innovative digital platforms, education policies are no longer rigid but flexible, responsive to changing times, and able to facilitate optimal resource management to support sustainability.⁶¹

Transformative education requires the integration of transformative leadership, policy innovation, and strategic governance as interconnected elements in building a sustainable and inclusive education system. Transformative leadership plays a central role in driving ethical, visionary, and socially responsible change, while policy innovation serves as a strategic instrument for translating leadership values into adaptive and technology-based educational practices. At the same time, strategic governance ensures that education policies are implemented effectively through collaboration, contextual approaches, and long-term institutional planning. These three dimensions collectively support the realization of education that is responsive to global challenges, promotes social justice, and is aligned with the principles of sustainable development. Therefore, transformative education can only be achieved through holistic synergy between leadership, innovative policy frameworks, and governance systems that are adaptive to global dynamics and local educational needs.

SDGs-Oriented Sustainability Benchmarking and Transformation

Benchmarking in the transformation of sustainable education has become a key strategy for higher education institutions to measure their progress in supporting the Sustainable Development Goals (SDGs). Based on a literature review, benchmarking is not

⁵⁸ Abdulrahman A. Alhazemi, "Transformative Approaches to Continuing Education: Technology, Leadership, and SDGs in Higher Education Institutions," *International Journal of Learning and Teaching and Research in Education* 23, no. 5 (2024): 41, <https://doi.org/10.26803/ijlter.23.5.3>.

⁵⁹ Carolyn M. Shields, *Transformative Leadership in Education: Equitable, Inclusive, and Quality Education in an Uncertain and Complex World*, 3rd ed. (New York: Routledge: Taylor & Francis Group, 2025), 11–12.

⁶⁰ Rusdinal et al., "Transformative Policy Models for Education Digitalization: Accelerating Education for Sustainable Development (ESD) in Indonesia," *International Journal of Education Learning and Research* 24, no. 2 (2025): 462, <https://doi.org/10.26803/ijlter.24.2.23>.

⁶¹ Rusdinal et al., "Transformative Policy Models for Education Digitalization: Accelerating Education for Sustainable Development (ESD) in Indonesia"; Alhazemi, "Transformative Approaches to Continuing Education: Technology, Leadership, and SDGs in Higher Education Institutions."

only used as a tool to evaluate the quality of education but also as an instrument of institutional transformation that focuses on global sustainability. Leal et al. explain that higher education institutions must integrate sustainability into all aspects of their activities, including economic, social, environmental, and institutional dimensions. This integration must be reflected in governance, education, research, campus operations, and community engagement, as well as in the university's commitment to support sustainability and the achievement of the SDGs.⁶² Through benchmarking, universities can compare best practices across institutions, thus creating more measurable and systematic standards for educational sustainability.

The integration of the SDGs into university governance shows that such integration should not be purely symbolic or administrative, but should be an integral part of the institution's culture and the university's long-term strategy. Research by Cuesta-Claros et al. shows that the implementation of the SDGs in higher education brings changes in discursive, institutional, relational, and resource management aspects.⁶³ However, the study also found that many universities are still in the reformative stage and have not fully achieved a profound transformation. Therefore, comparisons are needed to identify the extent to which the integration of the SDGs has been implemented substantively in the higher education system.

In addition to the integration of the SDGs, sustainable transformation is also closely linked to ethical innovation. Based on a literature review, innovation in higher education is not only oriented towards technological development but must also consider ethical values, social responsibility, and environmental sustainability. Purcell et al. explain that the universities of the future must be agents of social transformation capable of generating sustainable innovation through collaboration between students, academics, and society.⁶⁴ In this context, benchmarking helps higher education institutions evaluate innovation practices that are not only academically effective but also have a socially equitable and global well-being oriented impact.

Global justice and sustainability are essential in higher education. This is evidenced by the literature that shows that the transformation of SDG-based universities aims to create a more inclusive, equitable, and socially just education system. Zhu et al. emphasized that universities play an important role in advancing economic, social, and environmental development simultaneously through measurable sustainability indicators.⁶⁵ Sustainability benchmarking enables universities to identify global inequalities, strengthen international collaboration, and enhance institutional contributions to achieving global development goals.

⁶² Susana Leal, Ulisses M. Azeiteiro, and Ana Marta Aleixo, "Sustainable Development in Portuguese Higher Education Institutions from a Faculty Perspective," *Journal of Cleaner Production* 434, no. 139863 (2024): 10, <https://doi.org/10.1016/j.jclepro.2023.139863>.

⁶³ Andrea Cuesta-Claros et al., "Do Sustainable Development Goals Transform Universities? – Analysis of Steering Effects and Depth of Change," *Earth System Governance* 17, no. October 2022 (2023): 5–9, <https://doi.org/10.1016/j.esg.2023.100186>.

⁶⁴ Wendy Maria Purcell, Heather Henriksen, and John D. Spengler, "Universities as Transformational Sustainability Engines towards Achieving Sustainable Development Goals: A 'Living Laboratory' for Sustainability," *International Journal of Sustainability in Higher Education* 20, no. 8 (2019): 1354, <https://doi.org/10.1108/IJSHE-02-2019-0103>.

⁶⁵ Bifeng Zhu et al., "Revealing Dynamic Goals for Sustainable Development of Universities with Exploration of SDGs Coupling," *Scientific Reports* 14, no. 1 (2024): 11–12, <https://doi.org/10.1038/s41598-024-73702-3>.

Therefore, sustainability in education does not only focus on environmental aspects but also on social justice and equitable access to quality education.

In addition, the concept of a future-oriented university has become a major focus in the transformation of modern higher education. Future universities are expected to adapt to global changes, including the challenges of digitalization, climate change, and social inequality. Research by Karo et al. shows that universities need to develop sustainability strategies that are more reflective, collaborative, and transformative in order to become agents of transformative change in society.⁶⁶ Benchmarking serves as a strategic tool to help universities map the strengths, weaknesses, opportunities, and challenges of institutions in preparing for the future. Through this process, universities can develop more innovative and long-term oriented policies.

Based on the overall discussion, it can be concluded that benchmarking plays an important role in supporting the transformation of universities towards the SDGs and global sustainability. The integration of the SDGs, ethical innovation, sustainability, global justice, and future-oriented universities are key themes that are intertwined in building a transformative education system that can adapt to the challenges of the future. Through benchmarking, universities can adopt best practices, improve the quality of institutional governance, and strengthen higher education's contribution to sustainable development. Thus, benchmarking serves not only as a tool for quality evaluation but also as a strategic approach to creating innovative, fair, and future-oriented universities.

Theme	Main Findings	Implications
Benchmarking	Functions as a strategic mechanism for institutional learning and continuous improvement.	Strengthens organizational performance and quality culture.
Quality Assurance	Benchmarking supports systematic quality assurance and continuous evaluation.	Improves institutional quality and accreditation readiness.
Digital Transformation	Digital technologies enhance governance, learning, and benchmarking implementation.	Increases institutional effectiveness and competitiveness.
Transformational Leadership	Leadership drives organizational change and benchmarking adoption.	Supports innovation and sustainable institutional development.
Sustainability (SDGs)	Benchmarking aligns institutional governance with sustainability principles and SDGs.	Promotes long-term quality transformation and social responsibility.
Comparative Perspective	Islamic and Public Universities implement benchmarking within different governance contexts but pursue similar quality objectives.	Provides context-sensitive benchmarking strategies.

⁶⁶ Erkki Karo et al., "How Can Universities Become Agents of Transformative Change? Sustainability Strategy at European Universities of Technology," *Minerva*, 2026, 15–16, <https://doi.org/10.1007/s11024-026-09636-z>.

Discussion

Benchmarking in higher education has evolved from a simple process of comparing institutional performance into a collaborative strategy for sustainable quality transformation through knowledge exchange, academic networking, and adaptive governance.⁶⁷ In Islamic universities, benchmarking supports not only academic quality but also ethical values, spirituality, and social responsibility through collaborative governance and stakeholder participation.⁶⁸ In contrast, public universities emphasize global competitiveness, technological innovation, and sustainable governance.⁶⁹ Despite these differences, both institutions require collaborative benchmarking to facilitate institutional learning, knowledge sharing, and continuous quality improvement.

Sustainable quality transformation also requires adaptive leadership capable of responding to globalization, technological advancement, and sustainability demands through an innovative and collaborative institutional culture.⁷⁰ Sustainability leadership strengthens institutional vision, stakeholder engagement, and commitment to sustainable development, making benchmarking an effective strategy for identifying and adopting best leadership practices. While leadership in Islamic universities integrates ethical and spiritual values into institutional governance, public universities prioritize policy innovation, digital transformation, and global competitiveness.⁷¹ Consequently, benchmarking enables both types of universities to exchange experiences and develop adaptive leadership that supports sustainable and future-oriented higher education.

Islamic and public universities possess complementary strengths in responding to higher education transformation. Islamic universities contribute through value-based education, ethical leadership, character development, and social responsibility, whereas public universities demonstrate stronger capacity in research productivity, international collaboration, technological adaptation, and global competitiveness.^{72,73} Rather than positioning these institutions in a competitive dichotomy, the literature emphasizes collaboration through knowledge sharing, comparative practices, and institutional learning to strengthen sustainable quality transformation while preserving their respective institutional identities.

⁶⁷ Noam Lapidot-Lefler, Gilat Katz, and Hagit Horowitz, "Creating Sustainable Collaborative Spaces for Professional Growth: A Cross-Institutional Study in Higher Education," *Sustainability (Switzerland)* 17, no. 23 (2025): 4, <https://doi.org/10.3390/su172310790>.

⁶⁸ Caeiro et al., "Sustainability Assessment and Benchmarking in Higher Education Institutions-Critical Reflection."

⁶⁹ Burhan Djalaluddin et al., "Deradicalization Through Multicultural Islamic Religious Education in Islamic Universities," *Nazhruna: Journal of Islamic Education* 7, no. 3 (2024): 656–59, <https://doi.org/10.31538/nzh.v7i3.34>.

⁷⁰ Muhammad Asad Khan et al., "Leadership Style Interactions, Innovative Work Behaviors, Organizational Culture, and Organizational Civic Behavior," *SAGE Open* 10, no. 1 (2020): 1, <https://doi.org/10.1177/2158244019898264>.

⁷¹ Andik Rony Irawan, Triyo Supriyatno, and Faizal Rois Fatahillah, "The Implementation of Leadership Strength Based on Islamic Values in State Islamic Universities," *Nazhruna: Journal of Islamic Education* 5, no. 3 (2022): 1034, <https://doi.org/10.31538/nzh.v5i3.2531>.

⁷² Suyadi et al., "Academic Reform and Sustainability of Islamic Higher Education in Indonesia," *International Journal of Education Development* 89, no. 102534 (2022): 1–2.

⁷³ Badri Munir Sukoco et al., "A Comparative Study of ASEAN Research Productivity," *SAGE Open* 13, no. 1 (2023): 1–2, <https://doi.org/https://doi.org/10.1177/21582440221145157>.

The Sustainable Development Goals (SDGs) provide a strategic framework for higher education transformation by integrating education, research, innovation, governance, and community engagement.⁷⁴ Universities are increasingly recognized as transformative agents responsible for promoting sustainability, social justice, and inclusive development.⁷⁵ Accordingly, higher education institutions are encouraged to strengthen curriculum reform, interdisciplinary collaboration, digital transformation, global partnerships, and sustainability-oriented governance to improve institutional resilience and contribute to the achievement of the SDGs.⁷⁶

The findings indicate that sustainable benchmarking integrates academic quality improvement, digital transformation, and SDGs-based sustainability into higher education governance. Benchmarking therefore functions not only as a performance evaluation tool but also as an institutional learning mechanism for identifying best practices and promoting continuous improvement. The literature identifies three core benchmarking dimensions: academic quality, digital transformation maturity, and the integration of sustainability principles across education, research, community engagement, and institutional governance.

Based on these findings, this study proposes a sustainable benchmarking conceptual model consisting of three interconnected dimensions. The first is academic quality benchmarking, including curriculum evaluation, learning quality, research productivity, community service, accreditation, and academic governance. The second is digital transformation benchmarking, encompassing digital maturity, learning technologies, management information systems, data analytics, and technology-based decision making. The third is SDGs-based sustainability benchmarking, integrating environmental, social, economic, and governance dimensions into institutional activities. Together, these dimensions provide a comprehensive framework for sustainable quality transformation in higher education.

The analysis further demonstrates that successful benchmarking depends on transformational leadership and adaptive institutional policies. Leadership promotes organizational vision, quality culture, collaboration, and innovation, while institutional policies translate benchmarking results into strategic quality improvement programs. Digital transformation and sustainability require not only technological infrastructure but also organizational commitment and governance capable of supporting continuous institutional change.

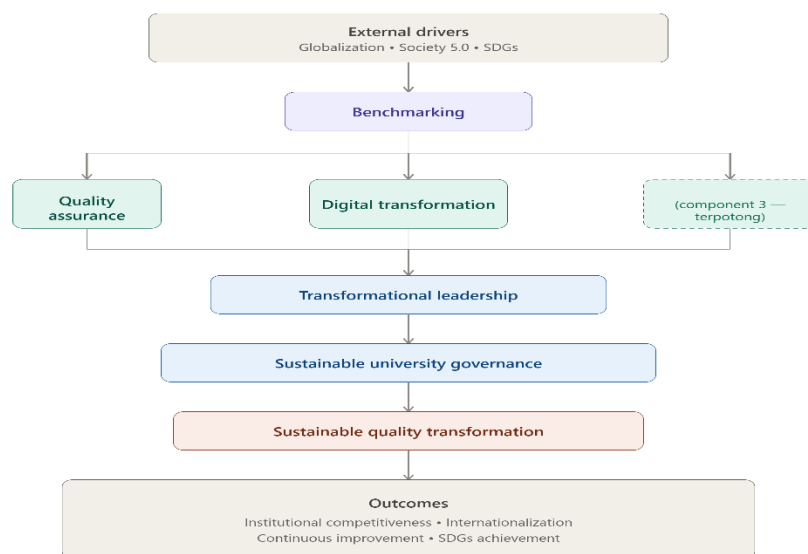
Overall, the proposed conceptual model illustrates sustainable benchmarking as an integrated process linking institutional challenges, multidimensional benchmarking, transformational leadership, and sustainability-oriented governance. This process enhances academic quality, digital maturity, governance effectiveness, institutional innovation, and contributions to the SDGs. Accordingly, benchmarking should be understood not merely as an evaluation instrument for rankings or accreditation, but as a strategic approach to developing adaptive, competitive, and sustainable universities.

⁷⁴ Ramaswamy et al.

⁷⁵ Vasiliki Kioupi and Nikolaos Voulvoulis, "Sustainable Development Goals (SDGs): Assessing the Contribution of Higher Education Programs," *Sustainability* 12, no. 17 (2020): 1–3.

⁷⁶ Serafini et al., "Sustainable Development Goals in Higher Education Institutions: A Systematic Literature Review," 1–2.

The findings indicate that sustainable benchmarking extends beyond institutional performance evaluation by functioning as a strategic mechanism that integrates quality assurance, digital transformation, transformational leadership, and sustainability-oriented governance. This integration enables universities to strengthen institutional learning, improve governance, and support continuous quality enhancement aligned with the Sustainable Development Goals (SDGs). However, the implementation of sustainable benchmarking remains challenging due to differences in institutional governance, organizational culture, leadership capacity, financial resources, and digital readiness, particularly between Islamic and Public Universities. These contextual differences suggest that benchmarking strategies should be adapted to each institution's characteristics while maintaining shared objectives of quality improvement and sustainability. Therefore, although the proposed conceptual framework provides a comprehensive theoretical basis for sustainable quality transformation, its practical applicability requires further empirical validation. Future research is recommended to examine the framework through comparative case studies, surveys, or mixed-method approaches involving Islamic and Public Universities across different institutional and national contexts to refine and strengthen its implementation.



CONCLUSION

This study demonstrates that benchmarking has evolved beyond a performance evaluation and accreditation instrument into a strategic mechanism for sustainable quality transformation in Islamic and Non-Islamic Universities. The findings indicate that benchmarking facilitates institutional learning, strengthens quality assurance systems, promotes governance innovation, supports digital transformation, and aligns institutional development with the Sustainable Development Goals (SDGs). Although Islamic Universities primarily emphasize ethical values, spirituality, and social responsibility, while Public Universities prioritize research excellence, internationalization, technological

innovation, and global competitiveness, both institutional contexts can benefit from collaborative benchmarking to enhance institutional resilience and continuous quality improvement.

The main contribution of this study is the development of a Sustainable Benchmarking Conceptual Framework, which positions benchmarking as the central mechanism linking four interconnected dimensions: quality assurance, transformational leadership, digital transformation, and sustainability-oriented governance. Through this integration, the framework provides a holistic approach for addressing institutional challenges while supporting continuous improvement, stakeholder collaboration, innovation, and the integration of sustainability principles across education, research, community engagement, and institutional management.

This study contributes theoretically by extending benchmarking literature beyond its traditional focus on quality evaluation and accreditation, integrating it with leadership, digital transformation, governance, and sustainability into a unified conceptual framework for higher education. Practically, the framework offers strategic guidance for university leaders, quality assurance units, and policymakers in designing benchmarking initiatives that strengthen institutional quality, digital readiness, collaborative governance, and SDGs implementation. Nevertheless, this study has several limitations. As a conceptual library research, the proposed framework has not been empirically validated and therefore cannot yet explain causal relationships or institutional outcomes across different higher education contexts. In addition, the synthesis relies on existing literature, which may not fully capture contextual variations among Islamic and Public Universities in different countries.

Based on these findings, university leaders are encouraged to institutionalize benchmarking through cross-university partnerships, integrate benchmarking outcomes into strategic planning and internal quality assurance systems, strengthen digital infrastructure and leadership capacity, and embed sustainability principles within institutional policies and governance. Policymakers should also develop national benchmarking guidelines, provide policy incentives for inter-university collaboration, and support SDGs-oriented quality assurance frameworks that accommodate the distinctive characteristics of both Islamic and Public Universities. Future research should empirically validate and refine the proposed conceptual framework through comparative case studies, mixed-methods, and longitudinal research involving diverse institutional and national contexts

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