

# The mirage of university rankings: Toward transparent and trustworthy measures of academic excellence

Malik Sallam<sup>1, 2, \*</sup> 

<sup>1</sup> Department of Pathology, Microbiology and Forensic Medicine, School of Medicine, The University of Jordan, Amman 11942, Jordan

<sup>2</sup> Department of Clinical Laboratories and Forensic Medicine, Jordan University Hospital, Amman 11942, Jordan

\* Correspondence: Malik Sallam. email: malik.sallam@ju.edu.jo

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## Abstract

University rankings, initially conceived as instruments for benchmarking academic performance, have grown into influential global enterprises whose outputs often mirror structural resources more than scholarly merit. Although current university ranking systems present themselves as neutral arbiters of excellence, their reliance on reputation surveys, bibliometric weightings, and composite indices introduces opacity and susceptibility to bias. Methods that appear objective can inadvertently reinforce the advantages of already well-resourced institutions. The consequences are tangible. Faculty may feel pressure to orient research agendas toward citation maximization rather than intellectual originality, while governments and administrators often allocate resources toward incremental movement in numerical tables rather than safeguarding academic freedom or cultivating inquiry of lasting significance. Universities in lower-income settings rich in talent and engaged in contextually important scholarship are often structurally disadvantaged by metrics that reward financial capacity over intellectual diversity. This can narrow scholarly priorities and encourage conformity to external indices. This Editorial argues for a renewed evaluative framework that is transparent, resilient to distortion, and aligned with the university's enduring mission. Such a system should embody five attributes: transparency of metrics and datasets; integrity through decentralized, auditable infrastructures; emphasis on replicability, open knowledge, and societal contribution; explicit protection of academic freedom as a measurable indicator; and recognition of student outcomes through community contribution and intellectual resilience. At stake is a civilizational choice: whether to persist in mistaking reputation for reality, or to design evaluative measures that sustain the university's role in seeking, safeguarding, and transmitting knowledge in the service of humanity.

**Keywords** University rankings, academic freedom, research integrity, transparency, global inequality, higher education reform

## 1. Introduction

In the contemporary landscape of higher education, university rankings exert a notable influence on institutional reputation, resource allocation, and even national policy [1-3]. Prominent university ranking systems—among them those produced by the US News and World Report Best Global University Rankings, Quacquarelli Symonds (QS), Times Higher Education (THE), and the Academic Ranking of World Universities (ARWU or Shanghai)—present themselves as neutral arbiters of global excellence [4-7]. Yet their methodologies, built on reputation surveys, citation counts, and financial resources, do not fully capture the

wider attributes that define intellectual vitality or educational integrity [8].

The impact is not merely symbolic as higher education institutions frequently design strategies and direct resources with the goal of incremental movement in global ranking tables, sometimes at the expense of more durable commitments to academic freedom, equity, and intellectual diversity [9, 10]. Faculty may find themselves steered toward research areas that yield rapid citations, while students encounter structural inequities when admissions or tuition policies are informed more by ranking incentives than by principles of fairness and accessibility [11, 12]. Governance practices—such as transparency in appointments, procedures for promotion, or the

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safeguarding of open inquiry—remain conspicuously absent from most ranking criteria. In their omission, the lived realities of academic life—whether opportunities are equitably distributed, whether unorthodox ideas can be voiced without reprisal, and whether universities remain genuinely accessible across social and geographic divides—are rendered invisible.

The image projected by university rankings therefore risks privileging institutional size, historical prestige, or material wealth rather than the values that sustain intellectual progress [13]. This *Editorial* sought to examine those limitations and to propose a framework for evaluation that is transparent, resistant to distortion, and more faithfully aligned with the mission of higher education. Such a framework should extend beyond research output to include equitable access, merit-based enrollment and promotion, protection of academic freedom, and demonstrable contributions to society. By re-centering attention on these principles, university rankings can move past prestige-driven competition toward a truer reflection of the university's enduring purpose: the advancement and transmission of knowledge in the service of humanity.

## 2. Knowledge in historical perspective

In the ninth century, the Abbasid caliphs founded *Bayt Al-Hikma*—the House of Wisdom—in Baghdad. Within its walls, scholars from Greek, Persian, Indian, and other traditions convened not because a ranking system declared Baghdad “first” but because intellectual exchange recognized no boundaries [14, 15]. Their work was evaluated by its endurance—whether it could be translated, debated, and carried forward—not by surveys or numerical indices. Likewise, in medieval Andalusia, Muslim, Christian, and Jewish thinkers engaged one another on equal terms, producing a body of dialogue and synthesis that profoundly influenced Europe's intellectual course [16]. The true measure of Baghdad and Córdoba did not lie in any ranking, but in the vitality of the ideas they generated—ideas that transcended their own era and continued to shape the world long after.

The present era stands in contrast. Universities are increasingly assessed less by the depth of their scholarship than by their positions in tables constructed by private, often commercial, entities [17]. Higher education institutions, when overly focused on global ranking systems, risk evolving into entities that compete primarily for visibility and influence. Their strategies may become increasingly shaped by the demands of ranking formulas, often at the expense of the slower but essential work of cultivating deep scholarship, fostering original inquiry, and sustaining intellectual rigor. These indices often present themselves as neutral arbiters of academic standing, but their underlying methods—reliant on reputation surveys, citation counts, and resource indicators—are not immune to bias and can unintentionally favor those already advantaged [18-20]. Much as credit-rating

agencies once conferred a veneer of authority on complex financial instruments that later proved fragile, university ranking systems risk confusing visibility with value—elevating status over substance and creating an illusion of certainty where critical judgment is required [21, 22]. Their primary audiences are not the scholars who generate knowledge or the students who seek it, but administrators under pressure to demonstrate prestige, governments seeking symbolic capital, and the companies that profit from the cycle itself [23].

## 3. Why university rankings? The argument and its appeal

It would be overly simplistic to dismiss the concept of university rankings outright. The instinct to compare and to seek indicators of quality is neither new nor inherently misguided [24]. In principle, university rankings promise clarity in a world of complexity: they offer parents and students a means of navigating choice, provide policymakers with reference points, and claim to reward institutions that achieve academic excellence [13, 25]. In an era of mass higher education, the desire for ranking metrics is understandable, yet universities' true value lies not only in laboratories or commercialization but in the whole enterprise—integrating research, teaching, and critical inquiry to provide society's deepest benefits [26].

The question, then, is not whether measurement is needed, but whether the instruments we use are faithful to the values they claim to assess. A university ranking system that is transparent, methodologically sound, and grounded in the substance of academic life could serve as a meaningful guide, but it must also reflect the university's full mission—integrating research, teaching, and inquiry—rather than reducing its value to economic outputs alone [27]. It might highlight institutions that broaden access to opportunity, that foster innovative scholarship, and that protect intellectual freedom. But when such systems are shaped by commercial interests, political imperatives, or administrative aspirations, their compass can be deflected [28-30]. The risk lies not in the act of measuring but in mistaking proxy for reality—a subtle but consequential difference.

## 4. Reconsidering the limitations of global university ranking systems

In the past few decades, universities have increasingly been judged through the lens of a small set of influential global ranking systems. Chief among these are the US News and World Report Best Global University Rankings, QS, THE, and the ARWU. These platforms have become highly visible and are often treated as proxies for institutional excellence, influencing the decisions of students, policymakers, funders, and even faculty recruitment [31-33]. Their impact is undeniable: they shape perceptions, policies, and reputations on a global scale [32, 34]. Yet, as with any instrument that seeks to quantify a complex reality, these systems carry

intrinsic limitations [22, 35]. Each reflects the methodological decisions, weighting schemes, and data sources chosen by its creators. As such, outcomes may be shaped as much by these frameworks as by the underlying academic performance they aim to represent. University rankings can reward visibility over substance, privilege certain forms of output, and overlook dimensions of academic life that are harder to measure, such as intellectual freedom, community impact, or the cultivation of critical inquiry. Their contributions to transparency and competition should not be discounted; however, it is essential to recognize what they cannot do. By design, they cannot fully capture the depth and societal mission of the modern university—a mission that extends far beyond research output or citations as highlighted in (Table 1).

The QS World University Ranking relies heavily on surveys of academics and employers, with reputation measures accounting for half the overall score [5]. Such surveys capture broad esteem across borders, but perceptions are shaped as much by visibility, historical prestige, and disciplinary networks as by current academic vitality. Universities understandably invest in conferences, partnerships, and outreach—activities of real value but ones that can amplify recognition independent of research or teaching quality. A growing consultancy industry reflects the weight these perceptions now carry. Popularity, however measured, is not synonymous with merit; many important contributions have initially gone unnoticed.

**Table 1** Illustrative strengths and limitations of prominent university ranking systems.

Ranking System	Claimed Strength	Recognized Limitation <sup>e</sup>
QS <sup>a</sup>	Captures global academic reputation through large-scale surveys of scholars and employers	Reputation surveys are inherently subjective and influenced by visibility and outreach; consultancy services are available to institutions, raising questions about comparability
THE <sup>b</sup>	Presents a composite index of teaching, research, citations, and international outlook	Weightings and criteria are periodically adjusted and not always fully transparent; institutions may focus on optimizing metrics rather than improving core academic quality
ARWU <sup>c</sup>	Relies on recognized indicators such as Nobel Prizes, Fields Medals, citation counts, and publications in high-impact journals	Can privilege historically well-resourced institutions; indicators may reflect concentration of resources and language bias; citation-based measures are vulnerable to clustering and self-citation effects
Best Global Universities <sup>d</sup>	Aggregates multiple bibliometric and reputation-based indicators to provide a broad measure of global standing	Heavy emphasis on research output and citation metrics can overshadow teaching quality, societal impact, and non-English scholarship; methodology changes may alter outcomes across years

<sup>a</sup> QS: Quacquarelli Symonds; <sup>b</sup> THE: Times Higher Education; <sup>c</sup> ARWU: Academic Ranking of World Universities; <sup>d</sup> Best Global Universities: the US News and World Report Best Global University Rankings; <sup>e</sup> Limitations are widely discussed in the higher education literature and should be interpreted as general observations rather than specific allegations.

The Times Higher Education (THE) ranking broadens the frame by combining indicators of teaching, research, citations, and international outlook [6]. In theory, this integrates perception with measurable outputs. Yet the balance among these elements and methodological adjustments are not always fully transparent or externally audited. Even small changes can affect institutional placement, influencing reputation, recruitment, and funding. Marketing and communication strategies can also raise visibility without altering academic depth. When ranking bodies also provide platforms or services that shape exposure, questions about neutrality may arise.

The Academic Ranking of World Universities (ARWU), or Shanghai ranking, is often viewed as more data-driven, emphasizing Nobel Prizes, Fields Medals, citations, and publications in high-impact journals [7]. These indicators suggest rigor but also privilege historically well-resourced, often English-speaking institutions. Citations can be inflated by dense

collaboration networks and laureates can be affiliated for prestige rather than active scholarship. Reliance on “high-impact” journals reflects a narrow publishing ecosystem, potentially underrepresenting work of equal significance in other languages or contexts.

Finally, the U.S. News & World Report Best Global University Ranking combines bibliometric data with reputation surveys [4]. They offer an accessible snapshot of research influence but share similar constraints: citation-based measures reward disciplines prominent in indexed, English-language journals; surveys reflect familiarity and historic standing. Institutions working in specialized or regionally focused domains may therefore appear less visible, not less valuable. Taken together, these ranking systems illuminate fragments of a complex landscape. They reward prominence and resources as much as performance. They are useful prompts for comparison, but they remain proxies—authoritative in appearance yet inevitably partial.

## 5. The consequences of a distorted university ranking system

University ranking tables, though intended as tools for comparison, often become shorthand for excellence [36]. Their influence can subtly shift academic priorities, emphasizing what is most visible rather than what is most valuable. Faculty may feel pressure to pursue projects that yield rapid publications or citations, while long-term inquiry, foundational science, or research addressing regionally important but less globally prominent issues may receive less support. When rankings are used as policy instruments, the effects can widen [37].

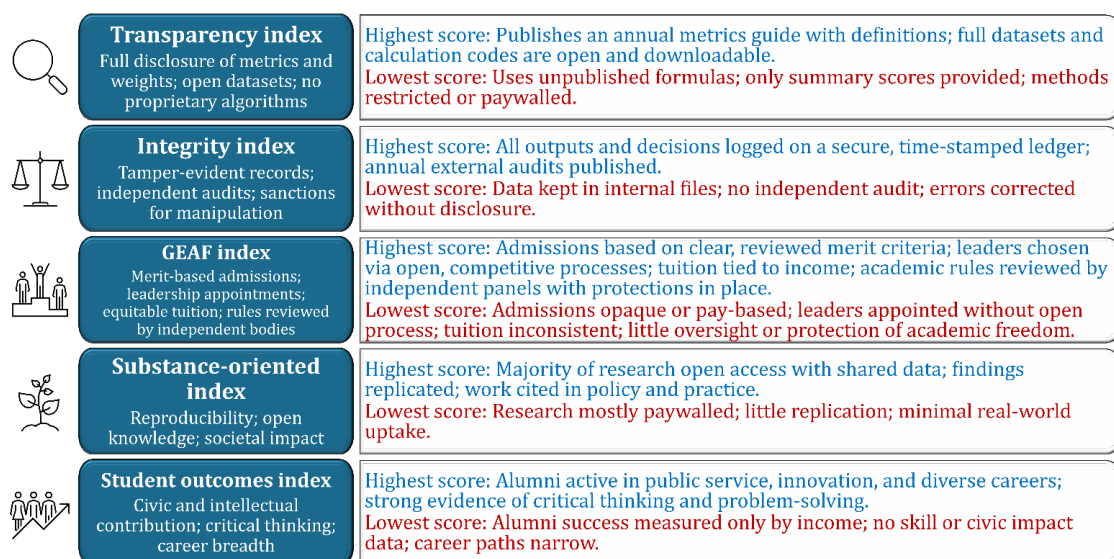
Governments and university boards, seeking competitive standing, may reward symbolic gains—a higher table position, an international affiliation—over sustained investment in teaching, research capacity, or open inquiry [38]. In such settings, students risk being treated more as consumers than partners, and faculty may narrow their work to align with institutional goals. These dynamics are particularly challenging for universities in lower-resource environments.

Institutions in the Global South often generate work of high social and scientific value, yet systems that reward English-language publishing, branding, and scale can leave this scholarship underrepresented. The result is not a lack of excellence but a lack of visibility [39].

The broader risk is intellectual narrowing. When signals of quality become proxies for wealth or affiliation, the diversity that drives discovery can erode. Ranking systems can be useful if interpreted with caution, but they must evolve to recognize excellence wherever it occurs. Universities best serve society when they remain what they were meant to be: communities dedicated to open, enduring knowledge.

## 6. Toward a transparent university ranking framework

Critiquing existing university ranking systems is only the first step; meaningful reform requires clear, auditable principles that resist distortion. An outline of such a framework is presented in (Figure 1) based on an *ad hoc* literature review [1, 18, 22, 40-46].



**Figure 1** A Proposed transparent framework for ranking universities. GEAF: Governance, Equity, and Academic Freedom.

A renewed framework for evaluating universities must begin with full transparency. Each metric—whether bibliometric, pedagogical, financial, or reputational—should be explicitly defined, and the underlying datasets should be made accessible for scholarly review. Proprietary algorithms, hidden weightings, or consultancy services that could create asymmetries of knowledge would have no place in such a model. As scientific findings require replication and peer review to be trusted, so too should the tools that claim to measure academic performance be open to audit and contestation.

Transparency alone, however, cannot guarantee integrity. In an era when data can be curated, purchased, or selectively presented, the system itself

must be designed to resist manipulation. Digital infrastructures now offer ways to achieve this. For example, decentralized, auditable records—whether through blockchain-based ledgers or equivalent secure platforms—could verify publications, funding sources, teaching evaluations, and other institutional outputs [47, 48]. Breaches or attempts to manipulate such records could be addressed not only through score adjustments but by temporary exclusion from ranking exercises, an approach that would reinforce credibility and trust.

Metrics must also emphasize substance rather than appearance. The prevailing prestige economy often conflates visibility with value; reputation surveys, however large, remain proxies for perception. Instead,

measures should reward the reproducibility of research, the translation of findings into practice, and the dissemination of knowledge in open, accessible formats. Impact would be assessed not by citation networks alone but by demonstrable contributions to health, education, environment, technology, and society.

No ranking can claim to measure excellence without safeguarding academic freedom. A university's standing should reflect whether appointments and promotions are based on scholarly merit; whether the governance structure protects inquiry from political or commercial influence; and whether diverse and sometimes heterodox ideas are welcomed rather than suppressed. An index of institutional independence would provide a clearer signal of intellectual vitality than simple resource counts.

Finally, measures of student outcomes must be reimagined. Success cannot be defined solely by graduate salaries or corporate placements. The enduring purpose of higher education is to develop critical thinkers, ethical innovators, and engaged citizens. Metrics that capture civic contribution, cultural and intellectual resilience, and the ability to generate social value would reflect the true mission of universities more faithfully than income indicators alone. In sum, a new evaluative system must be transparent, verifiable, substantive, protective of freedom, and socially attuned. Anything less risks perpetuating an illusion of excellence that measures stature rather than substance.

## 7. Conclusion

University rankings, in their current form, often reflect visibility and resource concentration more than the scale of learning or the integrity of scholarship. Their outputs can be shaped by historical advantage, financial capacity, and strategies designed to meet the assumptions of the ranking systems themselves. Institutions that devote substantial effort to aligning with these measures may rise, while those that maintain focus on inquiry, teaching quality, and service to society may be less visible in these ranking systems. In this sense, contemporary rankings sometimes function less as neutral gauges of excellence and more as indicators of participation in a particular economy of prestige. The need for evaluation is not in question; universities must be accountable, and students and policymakers benefit from clarity. But the criteria should reflect the mission that defines higher education such as the pursuit of truth, the cultivation of intellect, and the protection of academic freedom. Transparency must replace opacity; substantive measures must replace proxies of brand or scale; and freedom of inquiry must be recognized as essential to excellence. The challenge before us is to move from instruments that primarily reward visibility and wealth to systems that honor substance, equity, and freedom. Such a framework must be transparent, open to audit, and resistant to manipulation. Reform is

therefore not a question of aspiration but of necessity. If universities accept to be measured by illusions, they risk diminishing the very ideals they were built to protect.

## Abbreviations

ARWU	Academic Ranking of World Universities
QS	Quacquarelli Symonds
THE	Times Higher Education

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## Author Contributions

MS: Conceptualization, Writing – original draft, Writing – review & editing.

## Conflicts of Interest

No conflicts of interest exist.

## References

- Shin JC, Toutkoushian RK. The past, present, and future of university rankings. In: University rankings: Theoretical basis, methodology and impacts on global higher education. Springer; 2011. p. 1-16.
- Hazelkorn E. Impact and Influence of Rankings — The View from Inside Higher Education. In: Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence. London: Palgrave Macmillan UK; 2011. p. 82-120.
- Stack M. Global university rankings and the politics of knowledge: University of Toronto Press; 2021.
- U.S. News & World Report. Best Global Universities 2025 [Internet]. U.S. News & World Report; 2025. Available from: <https://www.usnews.com/education/best-global-universities>.
- QS Quacquarelli Symonds. QS Universities Rankings - Top Global Universities & Colleges 2025 [Internet]. London, England: QS Quacquarelli Symonds; 2025. Available from: <https://www.topuniversities.com/university-rankings>.
- Times Higher Education. World University Rankings 2025 [Internet]. London, UK: Times Higher Education; 2025. Available from: <https://www.timeshighereducation.com/world-university-rankings>.
- ShanghaiRanking Consultancy. 2025 Academic Ranking of World Universities [Internet]. ShanghaiRanking Consultancy; 2025. Available from: <https://www.shanghairanking.com/rankings/arwu/2025>.
- Ioannidis JP, Patsopoulos NA, Kavvoura FK, Tatsioni A, Evangelou E, Kouri I, et al. International ranking systems for universities and institutions: a critical appraisal. BMC medicine. 2007;5(1):30.



9. Adam E. Study of the influence of global university rankings on institutional strategies, decision-making, and policy choice: The case of four Canadian research universities: University of Toronto (Canada); 2021.
10. Aithal P, Kumar P. Global ranking and its implications in higher education. *SCHOLEDGE International Journal of Business Policy & Governance*. 2020;7(03):25-47.
11. Willie MM. Citation Cartels: Understanding Their Emergence and Impact on the Academic World. *Golden Ratio of Data in Summary*. 2024;4(2):862-870.
12. Amaral A. Equity in higher education: Evidences, policies and practices. Setting the scene. In: *Equity policies in global higher education: Reducing Inequality and increasing participation and attainment*. Springer; 2022. p. 23-46.
13. Marope PTM, Wells PJ, Hazelkorn E. Rankings and accountability in higher education: Uses and misuses: Unesco; 2013.
14. Kaviani R, Salehi N, Ibrahim AZB, Nor MRM, Hamid F, Hamzah NH, et al. The significance of the Bayt al-Hikma (House of Wisdom) in early abbasid caliphate (132A. H-218A. H). *Middle-East Journal of Scientific Research*. 2012;11(9):1272-1277.
15. Algeriani AA-A, Mohadi M. The house of wisdom (Bayt al-Hikmah) and its civilizational impact on islamic libraries: a historical perspective. *Mediterranean Journal of Social Sciences*. 2017;8(5):179-187.
16. Szpiech R. JUDAISM, CHRISTIANITY, AND ISLAM IN. In: *The Oxford Handbook of Religion and Europe*. Oxford University Press; 2021. p. 79–99.
17. Hazelkorn E, Altbach P. Caveat Emptor: Higher Education Rankings as Profit Centers. *International Higher Education*. 2024(120). DOI: 10.6017/895b9e0d.62d562ed.
18. Johnes J. University rankings: What do they really show? *Scientometrics*. 2018;115(1):585-606.
19. Gadd E. Mis-measuring our universities: Why global university rankings don't add up. *Frontiers in Research Metrics and Analytics*. 2021;6:680023.
20. Moustafa K. University rankings: Time to reconsider. *BioImpacts: BI*. 2024;15:30290.
21. Hunt JP. Credit rating agencies and the worldwide credit crisis: The limits of reputation, the insufficiency of reform, and a proposal for improvement. *Colum Bus L Rev*. 2009;109, <https://heinonline.org/HOL/LandingPage?handle=hein.journals/colb2009&div=7&id=&page=>.
22. Fauzi MA, Tan CN-L, Daud M, Awalludin MMN. University rankings: A review of methodological flaws. *Issues in Educational Research*. 2020;30(1):79-96.
23. Baltaru R-D, Manac R-D, Ivan M-D. Do rankings affect universities' financial sustainability?-financial vulnerability to rankings and elite status as a positional good. *Studies in Higher Education*. 2022;47(11):2323-2335.
24. Berman EP, Hirschman D. The sociology of quantification: Where are we now? *Contemporary Sociology*. 2018;47:257-266.
25. Horstschräer J. University rankings in action? The importance of rankings and an excellence competition for university choice of high-ability students. *Economics of Education Review*. 2012;31(6):1162-1176.
26. Boulton G, Lucas C. What are universities for? *Chinese Science Bulletin*. 2011;56(23):2506-2517.
27. Jarocka M. Transparency of university rankings in the effective management of university. *Business, management and education*. 2015;13(1):64-75.
28. Hauptman Komotar M. Discourses on quality and quality assurance in higher education from the perspective of global university rankings. *Quality Assurance in Education*. 2020;28(1):78-88.
29. Davis M. Can college rankings be believed? *She Ji: The Journal of Design, Economics, and Innovation*. 2016;2(3):215-230.
30. Lynch K. Control by numbers: New managerialism and ranking in higher education. *Critical studies in education*. 2015;56(2):190-207.
31. Millot B. International rankings: Universities vs. higher education systems. *International journal of educational development*. 2015;40:156-165.
32. Priporas C-V, Kamenidou I. Perceptions of potential postgraduate Greek business students towards UK universities, brand and brand reputation. *Journal of Brand Management*. 2011;18(4):264-273.
33. Ermagun A, Erinne J. A systematic exclusion induced by institutional ranking in engineering faculty hiring: Introducing a cycle of winners and losers. *Plos one*. 2022;17(12):e0275861.
34. Kethüda Ö. Evaluating the influence of university ranking on the credibility and perceived differentiation of university brands. *Journal of Marketing for Higher Education*. 2024;34(2):736-753.
35. Huang M-H. Opening the black box of QS World University Rankings. *Research Evaluation*. 2012;21(1):71-78.
36. Erkkilä T, Piironen O. What counts as world class? Global university rankings and shifts in institutional strategies. In: *World class universities: A contested concept*. Springer Nature Singapore Singapore; 2021. p. 171-196.
37. Lim MA, Williams Øerberg J. Active instruments: on the use of university rankings in developing national systems of higher education. *Policy Reviews in Higher Education*. 2017;1(1):91-108.
38. United Nations University. Rethinking Quality: UNU-convened Experts Challenge the Harmful Influence of Global University Rankings [Internet]. Tokyo, Japan: United Nations University; 2023. Available from: <https://unu.edu/press-release/rethinking-quality-unu-convened-experts-challenge-harmful-influence-global-university>.
39. CLAIR RS. 6 Marginalizing the Marginalized: How Rankings Fail the Global South. In: *Global university rankings and the politics of knowledge*. 2021. p. 133.
40. Austin I, Jones GA. Emerging trends in higher education governance: Reflecting on performance, accountability and transparency. *Research handbook on quality, performance and accountability in higher education*. 2018:536-547. DOI: 10.1080/00131857.2017.1381472.

41. Peters MA. Global university rankings: Metrics, performance, governance. Taylor & Francis; 2019. p. 5-13.
42. Harvey L. Rankings of higher education institutions: A critical review. *Quality in Higher Education*. 2008;14:187-207.
43. Barron GR. The Berlin principles on ranking higher education institutions: Limitations, legitimacy, and value conflict. *Higher Education*. 2017;73(2):317-333.
44. Hamann J, Ringel L. The discursive resilience of university rankings. *Higher Education*. 2023;86(4):845-863.
45. Lerch JC, Frank DJ, Schofer E. The social foundations of academic freedom: Heterogeneous institutions in world society, 1960 to 2022. *American Sociological Review*. 2024;89(1):88-125.
46. Spannagel J, Kinzelbach K. The academic freedom index and its indicators: Introduction to new global time-series V-Dem data. *Quality & quantity*. 2022;1. DOI: 10.1007/s11135-022-01544-0.
47. Merlec MM, Sinai NK, In HP, editors. A Blockchain-based Trustworthy and Secure Review System for Decentralized e-Portfolio Platforms. *Proceedings of the 14th International Conference on Information and Communication Technology Convergence (ICTC); 2023 October 11-13; Jeju Island, Korea*. Piscataway, NJ: IEEE.
48. Alammary AS. Building a sustainable digital infrastructure for higher education: A blockchain-based solution for cross-institutional enrollment. *Sustainability*. 2024;17(1):194.