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Article

Comparative Analysis of Global University Ranking Dynamics: A Multi-Metric Evaluation of Performance Shifts

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Abstract

This study presents a multi-metric analysis of the QS World University Rankings by Subject 2026: Engineering & Technology, examining ranking structure, temporal movement between 2025 and 2026, country-level concentration, and indicator-level performance across the leading universities. The dataset contains 2025/2026 ranks, overall score, and five core QS indicators: academic reputation, employer reputation, citations, H-index, and international research network (IRN). The results show a highly concentrated global landscape, with the United States contributing 22 universities, while China, the United Kingdom, and Australia each contribute 8 universities. At the institutional level, the score distribution is steep at the top and compressed in the lower part of the list, led by MIT (95.9), Stanford University (93.5), and ETH Zurich (92.7), indicating that relatively small score differences can separate many lower-ranked institutions. The comparative analysis shows strong temporal stability, with a Pearson correlation of $r = 0.946$ between the 2025 and 2026 rankings, despite visible upward and downward mobility among a subset of institutions. Country-level results further reveal asymmetric national profiles: Switzerland records the strongest average ranking position (7.5) and highest average score (90.4), while Singapore achieves the highest employer reputation (92.8), citations (95.8), and H-index (94.8) among the top-performing countries. Volatility analysis indicates that China (STD = 16.2) and Australia (STD = 14.9) exhibit the largest cross-institutional rank fluctuations. Correlation analysis confirms that overall score is most strongly associated with 2026 rank ($r \approx -0.93$), followed by academic reputation ($r \approx -0.80$) and employer reputation ($r \approx -0.75$), whereas citations ($r \approx -0.34$), H-index ($r \approx -0.53$), and IRN show weaker direct effects. Overall, the findings demonstrate that elite university performance is shaped by a combination of strong reputation, research impact, and national concentration, rather than by a single dominant metric.

Keywords: global university rankings; ranking dynamics; higher education analytics; performance evaluation

1. Introduction

Global university rankings have become a major reference point in higher education, shaping institutional strategy [1], national policy, international visibility, and stakeholder perceptions of academic quality. Recent reviews show that rankings are no longer used only for student guidance [2], but also for benchmarking, governance, funding logic, and strategic positioning in increasingly competitive higher education systems. At the same time, this growth has intensified debate around how rankings define excellence and which institutional characteristics they reward. Recent literature [3] has therefore called for closer scrutiny of ranking methodologies, indicator selection, and the policy consequences of ranking-driven competition.

A central issue in this debate is methodological heterogeneity across ranking systems. The QS World University Rankings emphasize reputation, employability, research activity, and internationalization [4]; the QS subject rankings [5] specifically use academic reputation, employer reputation [6],

These findings suggest that country-level concentration, institutional mobility, and indicator-specific strengths should be examined jointly rather than in isolation [7].

Despite this growing body of work, three gaps remain.

- First, much of the recent literature focuses either on overall university rankings or on methodological critique, with less attention to subject-specific ranking dynamics, where indicator behavior may differ across disciplinary domains.
- Second, few studies combine temporal change analysis, country-level concentration, and indicator-based performance assessment within a single framework.
- Third, recent QS-oriented studies have mainly analyzed indicator relationships in broad institutional settings, while less is known about how these relationships behave in the Engineering & Technology subject domain under the latest QS subject methodology.

The QS World University Rankings by Subject 2026: Engineering & Technology provide a valuable context for addressing these issues because they report both overall results and the five main subject-ranking indicators for a globally visible and highly competitive field.

Against this background, the present study develops a multi-metric evaluation of performance shifts between 2025 and 2026 in the QS Engineering & Technology ranking. Using institutional-level and country-level evidence, it examines:

- The descriptive structure of the top-100 Universities,
- Ranking stability and volatility across the two years,
- Global concentration by country,
- Relative influence of academic reputation, employer reputation, citations, H-index, IRN, and overall score on ranking position

The major contribution of this work is that it integrates dynamic rank-change analysis, country-level comparative profiling, and indicator-based assessment within a single subject-specific framework, thereby providing a more comprehensive explanation of how elite engineering and technology universities maintain, improve, or lose competitive position in the latest QS ranking environment.

2. Data Source and Ranking Indicators

The research relies on the QS World University Rankings by Subject 2026 [?]: Engineering & Technology, which was published by TopUniversities on 25th March 2026. The QS world university rankings by subject are subject-specific, measuring universities within the Engineering & Technology domain, as opposed to a broad university-based ranking system [?]. The QS world university rankings by subject provide overall results as well as results at the indicator level, making it appropriate for comparative studies at the institutional or country level. Furthermore, the QS world university rankings by subject indicate that the Massachusetts Institute of Technology (MIT) ranks first in the Engineering & Technology domain for 2026, followed by other top universities like Stanford University and ETH Zurich.

The dataset includes the following variables [?]: ACADEMIC, ACADEMIC RANK, EMPLOYER, EMPLOYER RANK, CITATIONS, CITATIONS RANK, H, H RANK, IRN, IRN RANK, and SCORE, as well as the name of the university, country or territory, and aggregate ranks for 2025 and 2026. In this context, the score columns represent the indicator data, while the corresponding "RANK" columns show the rank of each university for the given indicator. As QS explains, the subject rankings are based on five indicators, namely academic reputation, employer reputation, research citations per paper, H index, and international research network (IRN). QS explains that the indicators are used to provide a picture of academic stature, employability, and research by the faculty, with variations for each subject in citation rates and weightings.

For this dataset, ACADEMIC indicates the extent to which researchers in that field evaluate an institution, while EMPLOYER represents how an employer views graduates in terms of quality. CITATIONS indicates the amount of citations of each study in terms of research citations per paper according to Elsevier Scopus database information; H indicates productivity and evaluation of research

output in terms of H-index; and IRN indicates the evaluation of international research collaborations in terms of scope. The paired rank variables indicate institution-specific rankings of each of these components. Finally, SCORE indicates the total QS ranking score. These variables in this study provide support for three levels of analysis: overall ranking change from 2025 to 2026, institution-specific indicator-level comparison, and country-level aggregation of performance profiles.

3. Descriptive Analysis

This section presents a descriptive analysis of the top-100 universities in the QS World University Rankings by Subject 2026: Engineering & Technology, focusing on the overall ranking structure, score distribution, and key institutional characteristics. The analysis aims to provide an initial understanding of how universities are positioned within the ranking system, highlighting patterns of concentration, score dispersion, and the relative separation between leading and lower-ranked institutions.

The lollipop chart ranks the top-100 universities according to overall score in a compact and visually clean format. The figure clearly shows the strong separation at the very top of the ranking, where institutions such as MIT (95.9), Stanford University (93.5), and ETH Zurich (92.7) lead the distribution. In contrast, the lower end of the top-100 remains tightly clustered, with scores around 74.5–74.6, indicating that relatively small score differences separate many institutions in the lower part of the list. Overall, the chart highlights both the hierarchy of top performers and the compressed score structure across much of the ranking.

Table 1 presents a detailed summary of the top 20 universities in the 2026 ranking, including their ranking positions, score values, and indicator-level performance, providing a benchmark for subsequent comparative and indicator-based analyses.

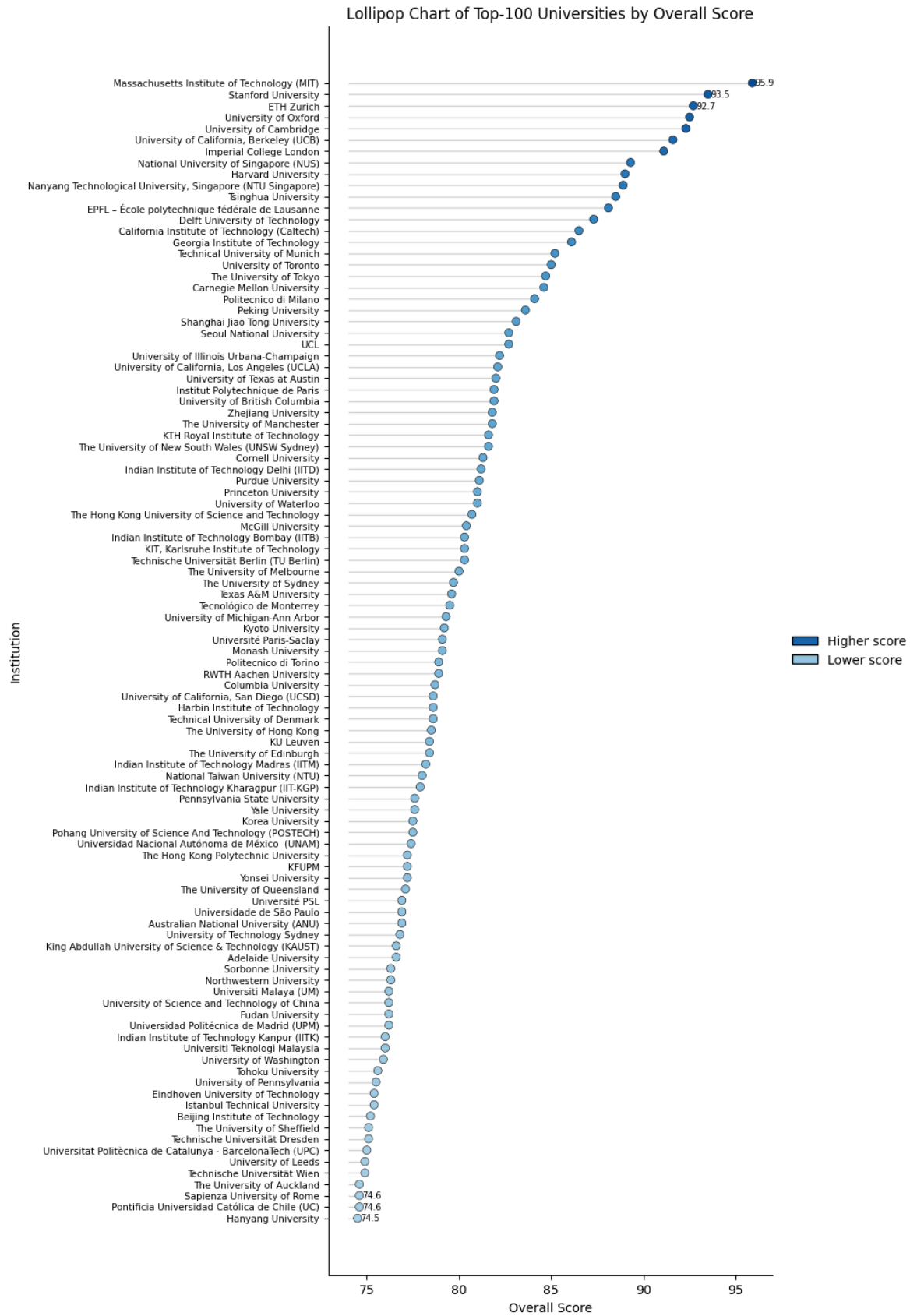


Figure 2. Lollipop chart of the top-100 universities by overall score, where color intensity reflects score magnitude and the dot positions indicate the ranking structure of institutional performance .

Table 1. Top 20 universities in the QS World University Rankings by Subject 2026: Engineering & Technology, with corresponding 2025 rank, rank change, overall score, country/territory, and major indicator scores. Positive Δ Rank values indicate improvement in 2026 relative to 2025, while negative values indicate decline.

2026	2025	Δ Rank	Score	Institution	Country/Territory	Academic	Employer	Citations	H	IRN
1	1	0	95.9	Massachusetts Institute of Technology (MIT)	United States of America	100.0	99.0	93.4	93.5	74.9
2	3	+1	93.5	Stanford University	United States of America	96.1	97.0	95.8	94.9	68.8
3	5	+2	92.7	ETH Zurich	Switzerland	97.4	90.6	90.8	89.4	85.0
4	2	-2	92.5	University of Oxford	United Kingdom	91.6	97.2	91.8	88.3	87.3
5	4	-1	92.3	University of Cambridge	United Kingdom	93.1	96.9	89.7	86.9	83.5
6	6	0	91.6	University of California, Berkeley (UCB)	United States of America	94.2	90.0	95.2	92.8	80.8
7	8	+1	91.1	Imperial College London	United Kingdom	95.8	88.2	90.9	87.5	84.6
8	12	+4	89.3	National University of Singapore (NUS)	Singapore	87.6	94.3	95.5	93.6	70.1
9	9	0	89.0	Harvard University	United States of America	82.8	100.0	93.6	90.0	75.1
10	11	+1	88.9	Nanyang Technological University, Singapore (NTU Singapore)	Singapore	89.1	91.2	96.0	96.1	67.0
11	7	-4	88.5	Tsinghua University	China	91.0	86.8	92.0	100.0	68.9
12	10	-2	88.1	EPFL – École polytechnique fédérale de Lausanne	Switzerland	94.3	86.5	89.4	83.8	71.0
13	14	+1	87.3	Delft University of Technology	Netherlands	94.7	81.0	85.1	82.3	83.5
14	13	-1	86.5	California Institute of Technology (Caltech)	United States of America	97.7	83.8	86.3	77.4	58.7
15	15	0	86.1	Georgia Institute of Technology	United States of America	96.3	77.1	90.1	89.2	65.4
16	19	+3	85.2	Technical University of Munich	Germany	92.5	77.6	83.0	83.1	83.3
17	17	0	85.0	University of Toronto	Canada	84.7	87.1	90.1	87.7	72.3
18	18	0	84.7	The University of Tokyo	Japan	90.5	85.8	79.1	80.2	68.3
19	19	0	84.6	Carnegie Mellon University	United States of America	91.3	77.6	91.3	86.6	69.8
20	21	+1	84.1	Politecnico di Milano	Italy	90.2	82.2	79.3	77.2	77.4

Note: Δ Rank = Rank₂₀₂₅ – Rank₂₀₂₆. Higher values indicate an improvement in ranking position in 2026. Indicator scores correspond to the QS subject-ranking components used in this study: Academic Reputation, Employer Reputation, Citations per Paper, H-index, and International Research Network (IRN).

4. Comparative Analysis of Ranking Changes

This section examines the ranking dynamics of universities between 2025 and 2026, with emphasis on the direction, magnitude, and stability of institutional movement. By analysing rank changes and the relationships between consecutive-year positions, the section assesses the overall stability of the ranking system while allowing meaningful upward and downward shifts for a subset of institutions.

The rank-change chart was designed using a magnitude-sensitive diverging color scheme to enhance interpretability. Positive rank changes are represented by blue tones and negative rank changes by red tones, while color intensity reflects the magnitude of movement. Accordingly, darker blue bars indicate stronger improvement in the 2026 ranking relative to 2025, whereas darker red bars indicate more substantial decline. This visual encoding allows simultaneous interpretation of both the direction and scale of ranking transitions across institutions

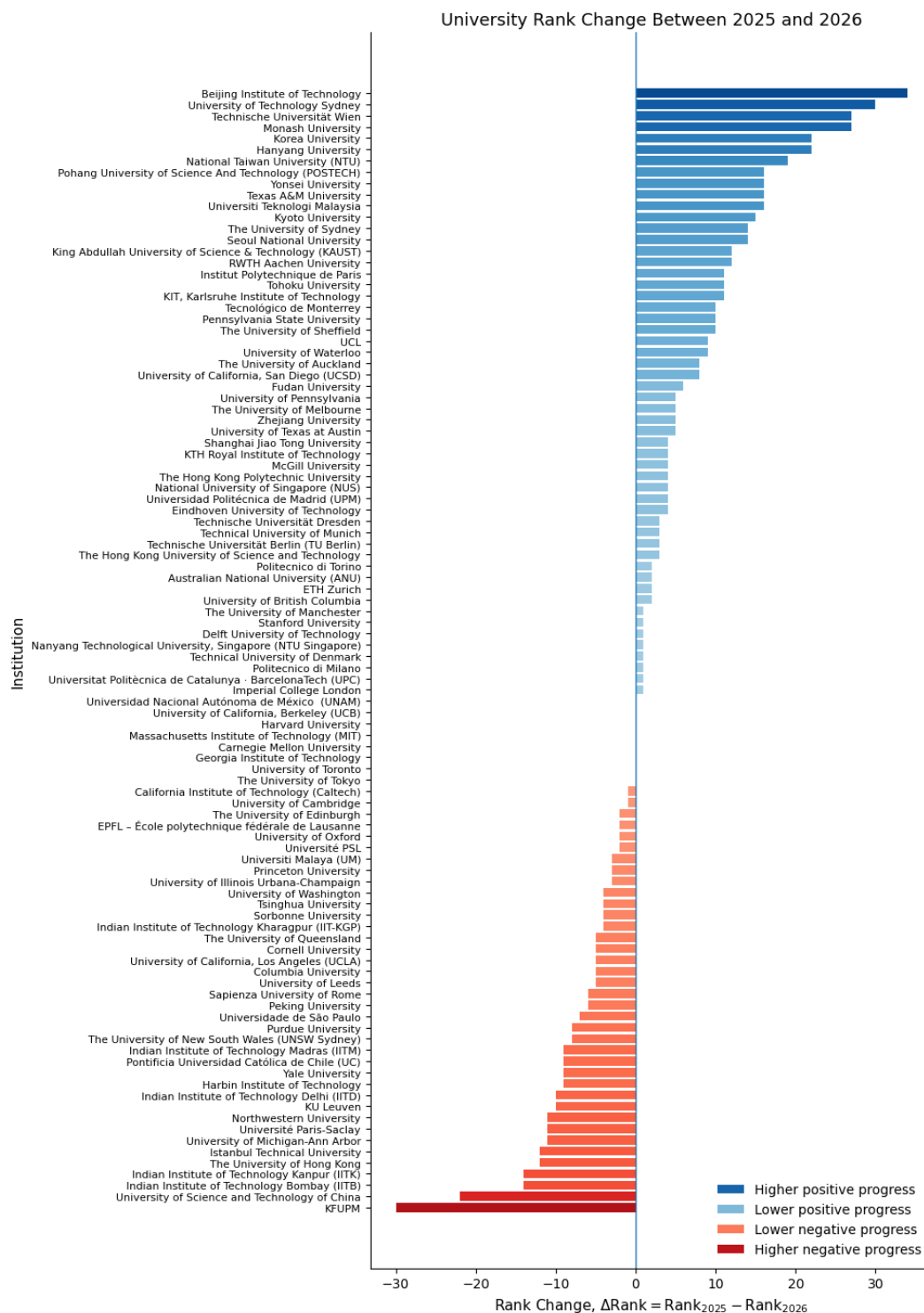


Figure 3. Rank change of universities between 2025 and 2026 ($\Delta\text{Rank} = \text{Rank}_{2025} - \text{Rank}_{2026}$), where blue tones indicate improvement and red tones indicate decline, with color intensity reflecting the magnitude of change.

The scatter plot compares university rankings in 2025 and 2026, with each point colored according to its 2026 rank to highlight relative performance levels. The diagonal line represents ranking stability, where institutions positioned close to the line exhibit minimal change between the two years. Points deviating from the diagonal indicate ranking shifts, with the distance reflecting the magnitude of change. The color gradient further distinguishes ranking tiers, enabling simultaneous assessment of both ranking position and volatility across institutions. The Pearson correlation coefficient between the 2025 and 2026 rankings is $r=0.946$, indicating a high degree of stability in global university rankings, with only moderate deviations observed among a subset of institutions.

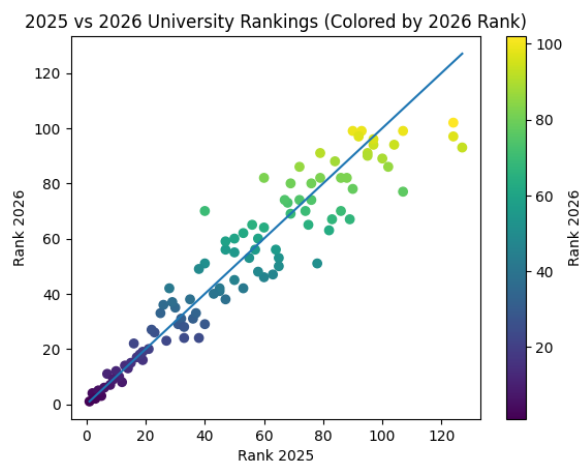


Figure 4. Scatter plot of university rankings in 2025 versus 2026. The diagonal line indicates unchanged rankings; deviations from the line reflect ranking shifts, with distance representing the magnitude of change.

Table 2 provides an analytical summary of the ranking transitions between 2025 and 2026, highlighting the degree of stability, dispersion, and directional movement across the top 100 universities.

Table 2. Analytical summary of ranking changes between 2025 and 2026 for the top 100 universities in the QS Engineering & Technology ranking. Positive Δ Rank values indicate improvement in 2026 relative to 2025, whereas negative values indicate decline.

Statistic	Value	Interpretation
Number of universities	100	Total number of ranked institutions included in the comparative analysis.
Mean Δ Rank	2.03	The positive mean suggests a slight net upward shift in ranking movement across the dataset.
Median Δ Rank	1.00	Most institutions experienced only marginal ranking changes, indicating limited central movement.
Standard deviation of Δ Rank	10.57	Ranking transitions exhibit moderate variability, with some universities showing substantial shifts relative to the overall pattern.
Minimum Δ Rank	-30.00	The largest observed decline confirms the presence of notable downward mobility among a subset of institutions.
First quartile (Q1)	-4.25	Approximately 25% of universities declined by more than 4 rank positions.
Third quartile (Q3)	8.00	Approximately 25% of universities improved by more than 8 rank positions.
Maximum Δ Rank	34.00	The strongest positive movement indicates substantial upward mobility for the best-performing improvers.
Percentage improved	54.0%	More than half of the institutions improved their ranking position in 2026.
Percentage declined	38.0%	A substantial minority of universities moved downward, reflecting competitive volatility within the ranking system.
Percentage unchanged	8.0%	Only a small proportion of institutions retained exactly the same rank across the two years.
Pearson correlation, Rank ₂₀₂₅ vs Rank ₂₀₂₆	0.946	The very high correlation confirms strong temporal stability in the overall ranking structure despite localized institutional movement.

Note: Δ Rank = Rank₂₀₂₅ - Rank₂₀₂₆. Positive values indicate improved ranking positions in 2026, whereas negative values indicate decline. The statistics show that although the ranking system remains highly stable overall, meaningful upward and downward movements are still observed for a subset of institutions.

5. Country-Level Distribution and Global Concentration

This section investigates the country-level distribution of universities within the QS World University Rankings by Subject 2026: Engineering & Technology, focusing on the global concentration of high-performing institutions. The analysis examines how universities are geographically distributed, identifies dominant national systems, and highlights disparities in representation across regions, providing insight into the spatial structure of global academic excellence.

The distribution of top-100 universities reveals a strong global concentration, with the United States of America clearly dominating by contributing 22 universities. A second tier of leading contribu-

tors includes China (8 universities), the United Kingdom (8 universities), and Australia (8 universities), each maintaining a substantial presence. Mid-level representation is observed from India (5 universities), the Republic of Korea (5 universities), and Germany (5 universities), while the remaining countries form a long tail, typically contributing 1–3 universities each. This pattern highlights both the dominance of a few countries and the broader global participation in elite higher education.

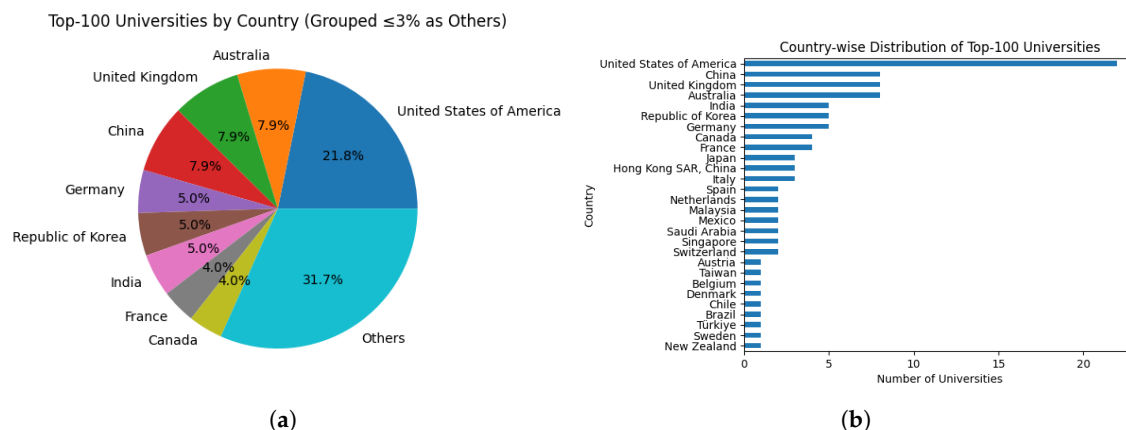


Figure 5. (a) Pie chart of the top-100 universities by country with minor contributors grouped as “Others”; (b) country-wise bar chart showing the number of universities per country, highlighting the dominance of leading nations and the long-tail distribution.

The country-level comparison was further enhanced using magnitude-sensitive color encoding to improve interpretability. For average overall rank, darker blue bars indicate stronger national performance, corresponding to lower mean ranking values, whereas lighter blue bars indicate weaker average positions. For citation performance, darker green bars denote higher average citation scores and lighter green bars indicate lower citation impact. This visual design enables clearer comparison of national standing across both ranking position and research citation strength.

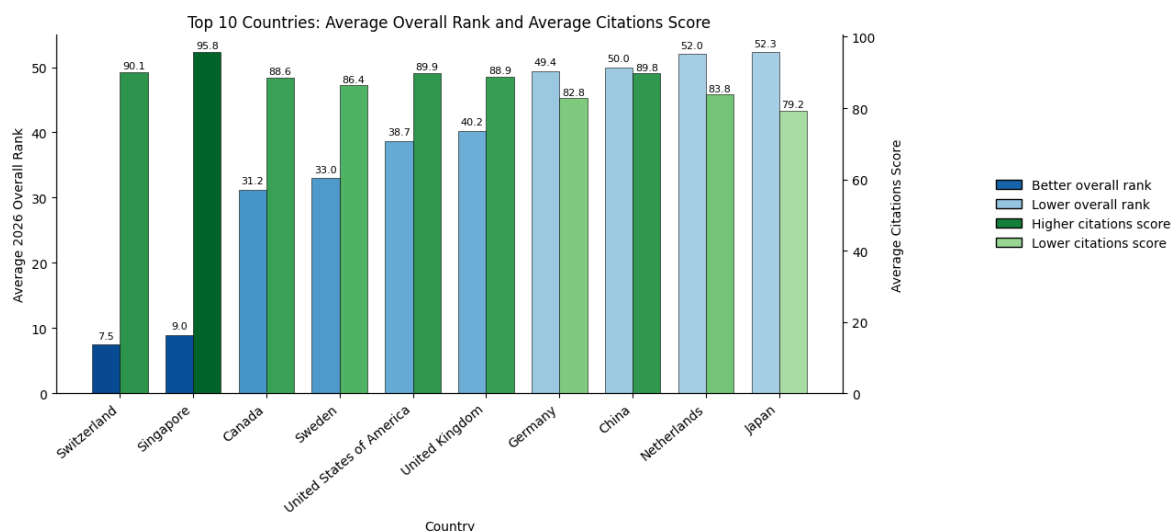


Figure 6. Bar-chart comparison of the top 10 countries based on average 2026 overall rank and average citation score, where color intensity reflects the relative strength of country performance in each indicator.

The country-level comparison shows that the strongest-performing systems in terms of average 2026 overall rank, such as Switzerland and Singapore, also maintain high H-index indicator values. China stands out with a particularly strong average H-index indicator despite a weaker mean overall rank relative to the leading countries. This suggests that H-index performance is an important

differentiator at the country level, although it does not perfectly align with overall ranking position, indicating that additional factors also shape national ranking outcomes.

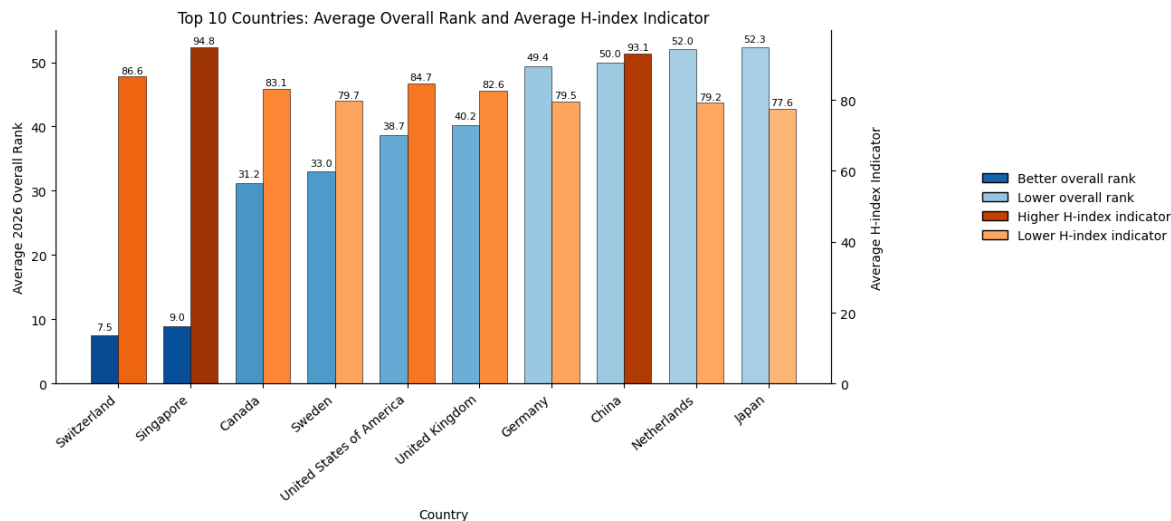


Figure 7. Bar-chart comparison of the top 10 countries based on average 2026 overall rank and average H-index indicator, with color intensity highlighting relative country performance in each metric

The correlation heatmap reveals clear structural relationships among the ranking indicators and confirms strong temporal stability in university performance. The strongest association is observed between 2025 rank and 2026 rank ($r \approx 0.95$), indicating that institutions largely maintain similar positions across the two years. Overall score shows a very strong inverse relationship with 2026 rank ($r \approx -0.93$), confirming that higher scores are closely associated with better ranking outcomes. Among the individual indicators, academic reputation ($r \approx -0.80$) and employer reputation ($r \approx -0.75$) emerge as the strongest contributors to competitive ranking performance, highlighting the dominant role of reputation-based measures in shaping university positions. In contrast, citations exhibits a weaker negative association with rank ($r \approx -0.34$), while the H-index indicator shows a moderate inverse relationship ($r \approx -0.53$), suggesting that research impact contributes to ranking outcomes but with less influence than reputation indicators. Finally, IRN demonstrates only a weak correlation with both rank and score, implying that international research network strength has a more limited direct effect within the current dataset.

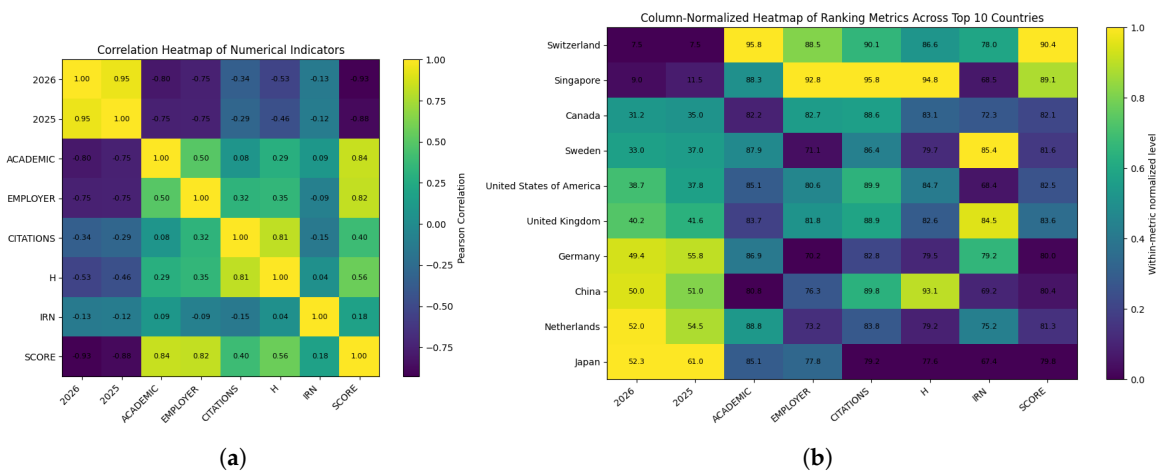


Figure 8. Column-normalized heatmap of ranking metrics across the top 10 countries, where each metric is scaled independently to highlight relative country performance within that indicator.

The column-normalized heatmap highlights the relative performance of the top 10 countries across each ranking metric individually. Switzerland shows the strongest overall profile, combining the best average 2026 rank (7.5), highest academic score (95.8), and highest overall score (90.4). Singapore also performs exceptionally well, with an average 2026 rank of 9.0, the highest employer reputation (92.8), highest citations score (95.8), and strongest H-index indicator (94.8). Sweden and the United Kingdom stand out in IRN, with values of 85.4 and 84.5, respectively, indicating stronger international research connectivity. In contrast, larger systems such as the United States and China maintain strong citation and H-index profiles, but their average overall ranks (38.7 and 50.0) are weaker than the leading smaller systems. Overall, the heatmap shows that country-level excellence is multidimensional, with different nations leading in different indicators rather than one country dominating every metric.

The box plot compares the distribution of overall scores across the major contributing countries and highlights average performance through color intensity. The United Kingdom (83.6) and the United States (82.5) show the strongest average score profiles, followed closely by Canada (82.1), while China (80.4) and Germany (80.0) occupy the middle range. Countries such as India (78.7), France (78.5), Australia (78.5), and the Republic of Korea (77.9) show comparatively lower average scores. The spread of the boxes also reveals differences in within-country variability, indicating that some national systems are more consistent in score performance than others.

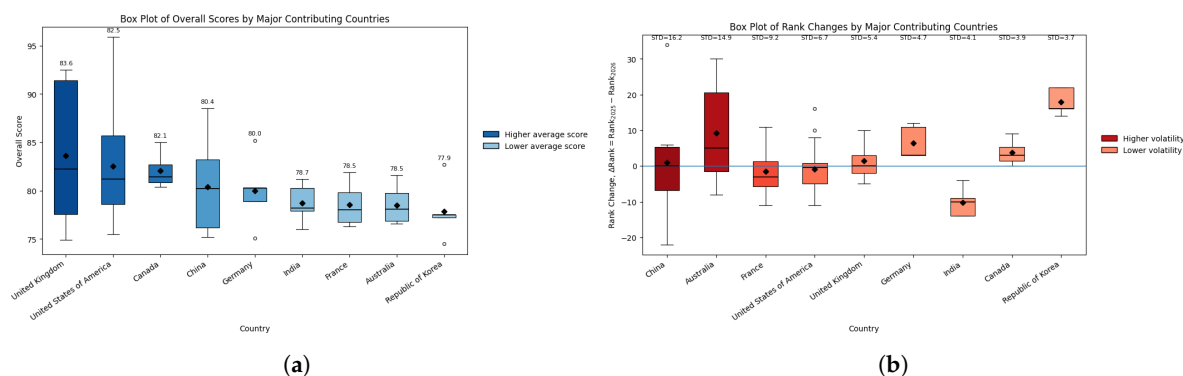


Figure 9. Box plot of overall scores by major contributing countries, where box color intensity reflects the average score and highlights differences in both central tendency and score dispersion across countries.

The box plot reveals substantial cross-country differences in ranking stability and volatility among major contributing countries. China (STD = 16.2) and Australia (STD = 14.9) show the highest variability in institutional rank changes, indicating greater dispersion in year-to-year movement across their universities. France (STD = 9.2) also shows moderate volatility, whereas the United States (STD = 6.7) and United Kingdom (STD = 5.4) appear more stable overall. Lower variability is observed for Germany (STD = 4.7), India (STD = 4.1), Canada (STD = 3.9), and the Republic of Korea (STD = 3.7), suggesting more consistent institutional performance. Overall, the figure highlights that national systems differ not only in ranking level but also in the stability of rank transitions over time.

6. Indicator-Based Performance Assessment

This section evaluates the relationships between the main ranking indicators and overall university position in the 2026 QS Engineering & Technology ranking. By examining academic reputation, employer reputation, citations, H-index, international research network, and overall score, the analysis identifies which indicators most strongly differentiate institutional performance and how their combined effects shape the competitive structure of the ranking system.

The 3D scatter plot illustrates the relationship between academic reputation, academic rank, and overall 2026 ranking. A clear inverse trend is observed, where higher academic reputation scores correspond to improved ranking positions. The alignment between academic rank and overall rank further indicates that academic reputation is a key determinant of institutional performance, with

strong consistency across these indicators. The fitted regression plane highlights the overall relationship among academic reputation score, academic rank, and 2026 overall rank, and can be expressed as

$$\text{Rank}_{2026} = -3.588 \times \text{Academic} - 0.001 \times \text{Academic Rank} + 348.435.$$

The negative coefficient associated with academic reputation indicates that institutions with a stronger academic reputation tend to achieve better overall ranking positions. By contrast, the coefficient of academic rank is comparatively small, suggesting that the academic reputation score has a more dominant influence in this fitted linear representation.

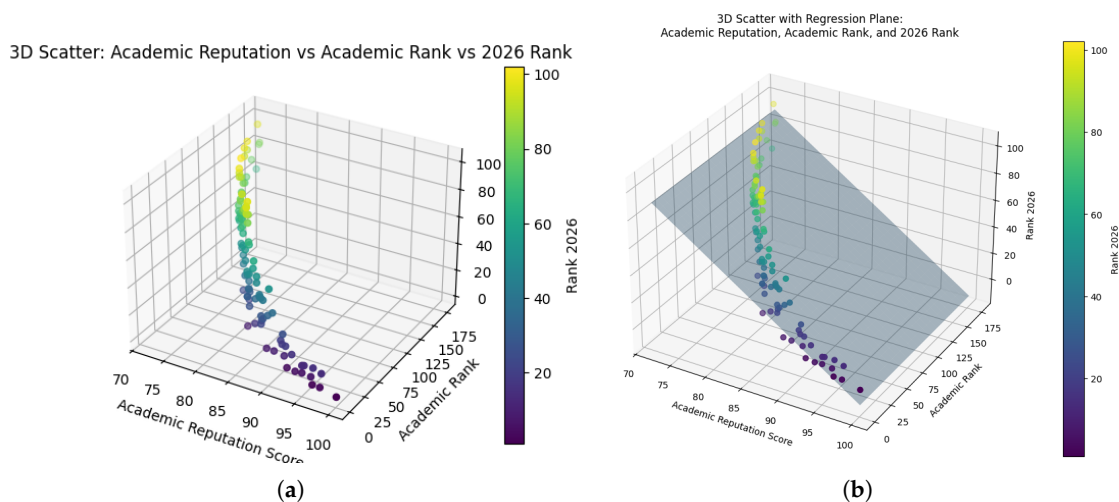


Figure 10. Three-dimensional scatter plot of academic reputation score, academic rank, and 2026 overall rank, illustrating the strong association between academic reputation and ranking performance.

The relationship between overall score and 2026 rank exhibits a clear nonlinear pattern, where higher scores correspond to substantially improved ranking positions. The curve demonstrates a steep decline in rank with decreasing score, particularly in the lower score range, while showing a flatter trend among top-performing institutions. This indicates that small variations in score at the upper end of the spectrum can lead to significant changes in ranking, highlighting the competitive intensity among leading universities.

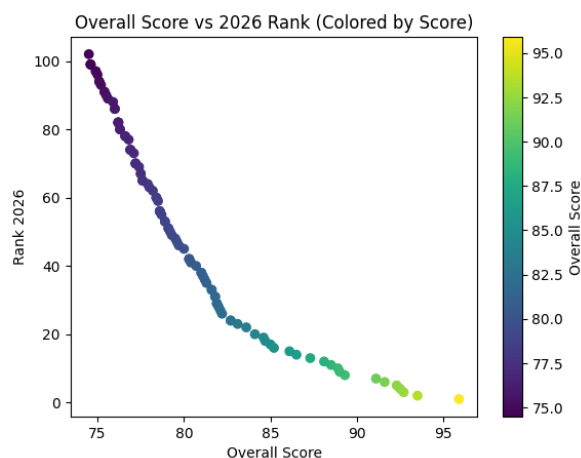


Figure 11. Scatter plot of overall score versus 2026 rank, illustrating a nonlinear inverse relationship, where small score differences at the top correspond to significant ranking variations.

The scatter plot reveals a clear inverse relationship between employer reputation score and 2026 overall rank, indicating that stronger employability-related reputation is associated with better

institutional ranking performance. The color gradient based on employer rank further supports this pattern, showing that universities with stronger employer standing tend to cluster at more competitive overall ranking positions. With a Pearson correlation coefficient of $r = -0.7543$, employer reputation appears to be an important contributor to ranking outcomes.

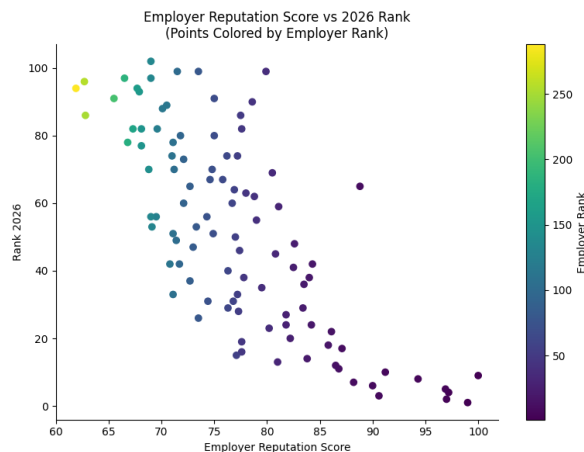


Figure 12. Scatter plot of employer reputation score versus 2026 rank, with points colored by employer rank, illustrating the association between employability reputation and overall ranking performance.

The scatter plot indicates a moderate inverse relationship between the H-index indicator and 2026 ranking position ($r \approx -0.520$), suggesting that institutions with stronger research impact, as measured by H-index, tend to achieve better overall rankings. However, the noticeable dispersion of points implies that the H-index alone is not a definitive differentiator among top universities, and other factors contribute significantly to final ranking outcomes.

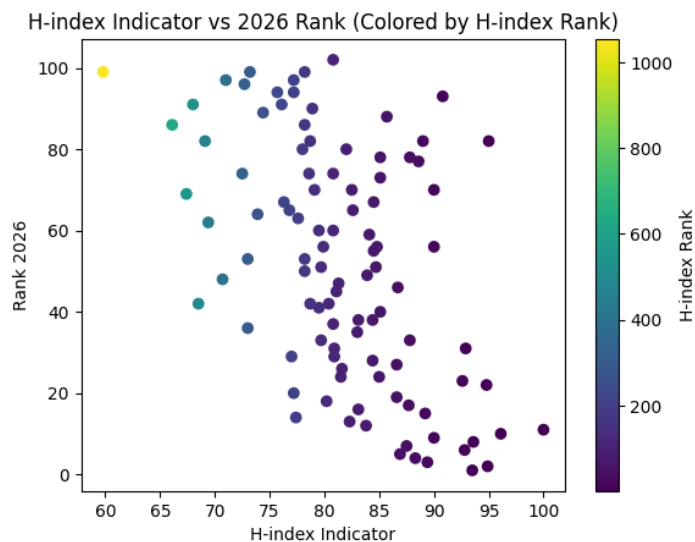


Figure 13. Scatter plot of H-index indicator versus 2026 rank, with points colored by H-index rank, illustrating the moderate influence of research impact on overall ranking performance

The revised radar chart compares the top 10 universities across the five main indicators using a focused radial range of 70–100, which enhances the visibility of inter-university differences. The figure shows that top-ranked institutions share consistently strong profiles, but still exhibit distinct strengths across academic reputation, employer reputation, citations, H-index, and IRN. While universities such as MIT, Stanford, and Oxford maintain highly balanced and strong indicator profiles, others display relative strengths in specific components, confirming that elite ranking performance is achieved through different multidimensional pathways.

Radar Chart of Top 10 Universities Across Main Indicators

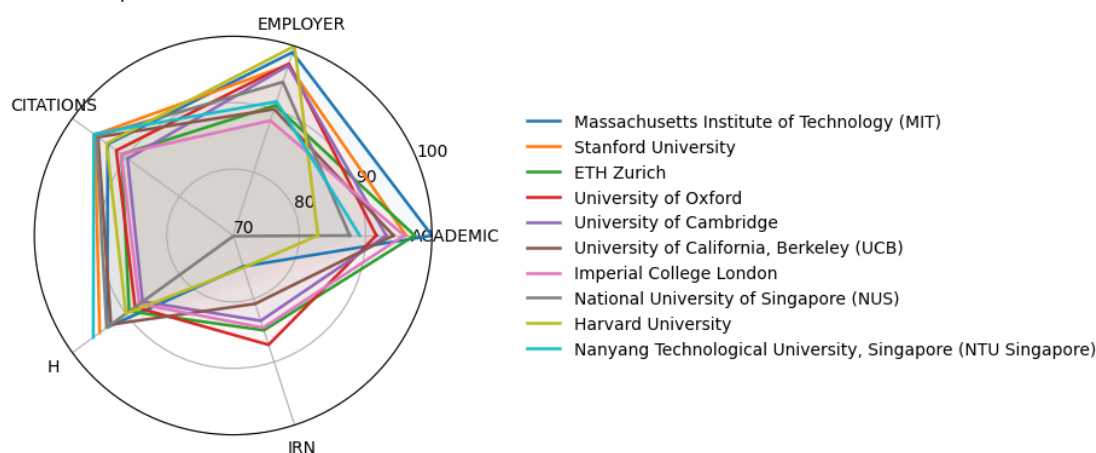


Figure 14. Radar chart of the top 10 universities across academic reputation, employer reputation, citations, H-index, and IRN, using a 70–100 radial range to highlight inter-institutional differences among leading performers.

7. Conclusions

The present study provided a multi-metric evaluation of the QS World University Rankings by Subject 2026: Engineering & Technology, with emphasis on institutional ranking dynamics, country-level concentration, and indicator-based performance differentiation. The findings confirm that the global top-100 landscape remains strongly concentrated, with the United States contributing 22 universities, while China, the United Kingdom, and Australia each contribute 8 institutions, demonstrating that elite performance in engineering and technology remains dominated by a limited number of national systems. At the institutional level, the ranking structure is highly compressed beyond the leading universities, where relatively small differences in overall score correspond to noticeable shifts in ranking position, reflecting the intensity of competition within the top-100 group.

The comparative analysis between 2025 and 2026 showed that the ranking system is highly stable overall, with a Pearson correlation coefficient of $r=0.946$, yet still permits meaningful upward and downward movement for a subset of universities. More than half of institutions improved their rank, while others experienced decline, indicating that although the broader ranking hierarchy is persistent, localized volatility remains an important feature of the system. At the country level, the analysis revealed that leading smaller systems such as Switzerland and Singapore outperform many larger systems in average rank and indicator strength, whereas countries such as China and the United States maintain strong citation- and H-index-related profiles but do not always achieve the strongest average overall positions. This suggests that national excellence is multidimensional and cannot be explained by research impact alone.

The indicator-based assessment further demonstrated that academic reputation and employer reputation are the strongest differentiators of ranking performance, with correlations of approximately -0.80 and -0.75 with 2026 rank, respectively, whereas citations and H-index play moderate supporting roles, and IRN exerts a comparatively weaker direct influence. These results imply that top engineering and technology rankings are shaped by a composite interaction among reputation, research impact, and international collaboration, rather than by any single metric in isolation. Overall, this work contributes a structured analytical framework for interpreting university ranking behaviour across institutional, indicator, and country levels. Future work may extend the analysis to multi-year ranking trajectories, predictive modelling of ranking movement, and cross-comparison with alternative global ranking systems to better understand the long-term evolution of institutional competitiveness.

Declaration of generative AI and AI-assisted technologies

During the preparation of this work, the authors used GPT-5.4 and Grammarly to improve the grammar and language of the manuscript. After using these tools, the authors carefully reviewed and edited the content as needed and take full responsibility for the content of the published article.

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Data Availability Statement: The data used in this study are obtained from the QS World University Rankings by Subject 2026: Engineering & Technology, which are publicly accessible via the TopUniversities website. The processed dataset and analysis scripts supporting the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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