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Negotiating Rankings and Mobility: A Comparative Analysis of Metric Adaptation Across Four Flagship Universities

Sinaria E. Hassan

ABSTRACT

Global university rankings have evolved from informational tools into governing frameworks that shape institutional strategy and international student mobility, often reinforcing systemic inequities and epistemic. This study examines how four flagship universities — Tsinghua University (China), Jagiellonian University (Poland), Universidade Estadual Paulista (Brazil), and the University of Wisconsin-Madison (USA) — navigate ranking pressures while leveraging artificial intelligence to recalibrate mobility patterns. Using a comparative case design informed by Qualitative Comparative Analysis, the study integrates ranking data, policy documents, forty-five interviews, and digital engagement metrics spanning 2020–2025. Findings reveal four persistent tensions: prestige versus equity, cultural identity versus algorithmic homogenization, infrastructural constraints versus innovation, and regulatory sovereignty versus global integration. The analysis is theoretically anchored in contextual integrity, relational mobility, and pluriversal validation. Results indicate that metric adaptation is a negotiated political process in which elite institutions leverage rankings for global visibility while managing competing local imperatives. The study advocates for equity-oriented metrics, digital sovereignty investments, and participatory algorithmic governance as pathways toward inclusive and sustainable international student mobility.

Keywords: *global university rankings, student mobility, metric adaptation, pluriversal validation, higher education governance, AI in education*

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INTRODUCTION

Global university rankings such as QS, Times Higher Education, and the Academic Ranking of World Universities have evolved from informational reference points into normative frameworks that shape institutional priorities, national policy agendas, and international student mobility patterns. Rather than functioning solely as comparative tools, rankings increasingly operate as governing mechanisms that define what counts as academic excellence. As Altbach and de Wit (2020) observe, "global rankings reflect a particular set of academic values that privilege Anglo American research traditions" (p. 6). This privileging is most visible in the emphasis on English-language publishing, citation-based impact, and narrow indicators of internationalization. Consequently, institutions in the Global South are frequently positioned as sending regions within an unequal global academic hierarchy (Yang, 2020).

Universities, however, are not passive recipients of ranking systems. Existing scholarship demonstrates that institutions actively interpret and respond to ranking pressures in strategic ways. Maringe and Foskett (2010) note that "institutions engage with global pressures selectively, aligning where benefits are visible and resisting where local missions are threatened" (p. 7). These strategic responses, often described as metric adaptation, reflect a persistent tension between the pursuit of global visibility and the preservation of cultural identity, social responsibility, and educational equity. Adaptation, therefore, represents an ongoing negotiation rather than a simple process of compliance.

This study contributes to the literature by examining how metric adaptation unfolds across four institutional contexts: Tsinghua University (China), Jagiellonian University (Poland), the University of Wisconsin Madison (United States), and Universidade Estadual Paulista (Brazil). Using a comparative case study design, the study integrates ranking indicators, institutional policy documents, semi structured interviews, and digital engagement metrics. This approach allows for the identification of patterned configurations linking institutional strategies to international student mobility outcomes. As Ragin (2008) explains, configurational analysis is particularly suited to examining "how different combinations of conditions produce similar outcomes" (p. 15).

Guided by three interrelated research questions, the study investigates how universities adapt to global ranking pressures, how these adaptations shape international student mobility flows, and what similarities and differences emerge across these institutions. The analysis is informed by a theoretical framework that conceptualizes adaptation through contextual integrity as a structural condition, relational mobility as a mediating mechanism, and pluriversal validation as a normative outcome, extended by concepts of algorithmic governance and data sovereignty. This framework provides a coherent lens for understanding how global metrics are negotiated within localized institutional and cultural contexts.

This study was guided by the following questions:

1. How do universities in Asia, Poland, Wisconsin in the United States, and Latin America adapt to global university ranking pressures?
2. How do these adaptation strategies shape international student mobility patterns?
3. What similarities and differences emerge across regions, and what do they imply for equity and sustainability in global higher education?

By integrating a theoretically grounded framework with a comparative methodological design, this study advances understanding of how global ranking systems function as governing infrastructures rather than neutral evaluative instruments (Espeland & Sauder, 2016). It demonstrates that metric adaptation reshapes mobility pathways, redistributes institutional advantage, and influences which forms of knowledge gain recognition and legitimacy. In doing so, the study connects debates on rankings, international student mobility, and epistemic justice, offering insights for scholars and policymakers seeking more equitable and context responsive approaches to global higher education assessment. The findings reflect the strategic responses of elite, flagship institutions (Hazelkorn, 2015).

THEORETICAL REVIEW

This study draws on three complementary concepts to analyze how institutions adapt to global ranking pressures. Each concept performs a distinct analytical function within the framework, operating respectively as a structural condition, a mediating mechanism, and a normative outcome. Together, these elements explain how institutional behavior is shaped and reshaped under global metric regimes.

Contextual Integrity functions as a structural condition that shapes how universities encounter and interpret global measurement systems. It draws attention to the alignment, and frequent misalignment, between standardized ranking indicators and locally embedded institutional missions. While global rankings privilege uniform measures such as publication volume, citation impact, and internationalization ratios, universities actively reinterpret and recalibrate these metrics to preserve cultural identity, fulfill domestic policy mandates, and respond to labor market and community needs (Brooks & Abrahams, 2023). In this way, contextual integrity foregrounds the constraints and enabling conditions under which adaptation takes place, while highlighting institutional agency within externally imposed evaluative infrastructures.

Relational Mobility operates as a mechanism through which institutions manage the circulation of students, faculty, and knowledge. Rather than conceptualizing mobility as a linear movement from the Global South to the Global North, this perspective emphasizes multidirectional and networked pathways shaped by institutional partnerships, hybrid credentials, and regional exchange systems (Teichler, 2017). By cultivating relational rather than extractive

mobility arrangements, institutions are better positioned to mitigate brain drain, support return migration, and sustain collaborative knowledge production. Relational mobility therefore explains how adaptation strategies translate ranking pressures into differentiated mobility outcomes (Kosmützky & Putty, 2023).

Pluriversal Validation functions as a normative and epistemic outcome of successful adaptation. It emphasizes the recognition and legitimation of multiple epistemologies, scholarly traditions, and evaluation criteria that extend beyond Anglophone and Eurocentric standards (Walsh, 2018). Practices such as the incorporation of Indigenous knowledge systems, community engaged scholarship, multilingual publication platforms, and non-traditional impact measures challenge the homogenizing effects of global rankings and expand what counts as academic value (Connell, 2019). This concept clarifies the type of institutional transformation that adaptation seeks to achieve when equity and epistemic justice are treated as central rather than peripheral concerns (Oldac, 2023).

Taken together, these perspectives position metric adaptation as a negotiated and ongoing process rather than a matter of straightforward compliance or resistance. They illuminate the risks of homogenization, exclusion, and technological lock in, while also identifying opportunities for innovation, institutional differentiation, and inclusion. The framework is further extended by concepts of algorithmic governance, data sovereignty, and digital equity, which foreground the growing role of ranking algorithms, artificial intelligence driven recruitment systems, and digital infrastructures in shaping evaluative authority (Floridi & Taddeo, 2016; Xin, Patel, & Demir, 2025). These concepts are critical for connecting the theoretical framework to the technological dimensions of the study. Although these concepts remain unevenly institutionalized, they provide critical insight into how power operates through data and how participatory governance might reconfigure existing metric systems.

This integrated theoretical framework reconceptualizes metric adaptation as a process of contextual integrity maintenance. This process involves the continuous and contested alignment of global measurement systems with local educational values, governance structures, and societal needs, as articulated by Maringe and Foskett (2010). By examining how the Chinese institution leverages rankings for regional development, how the Polish university embeds ethical and regulatory constraints within supranational frameworks, how the U.S. institution prioritizes community impact within a competitive prestige economy, and how the Brazilian university institutionalizes Indigenous knowledge under conditions of resource constraint, the study advances a pluriversal approach to higher education assessment (García & Méndez, 2023).

Table 1. Theoretical Framework and Institutional Illustrations

	China (Tsinghua)	Poland (Jagiellonian)	Brazil (UNESP)	United States (UW Madison)
Contextual Integrity (Condition)	Labor market aligned metrics	Community-engaged scholarship	Buen Vivir and Indigenous knowledge	Regional impact indicators
Relational Mobility (Mechanism)	Intra-Asian student exchanges	Hybrid credentials	South partnerships	Workforce-oriented retention
Pluriversal Validation (Outcome)	Multilingual publication platforms	Central European traditions	Indigenous recognition	Alternative indices (ROE)

Note. Table 1 summarizes how the three theoretical concepts manifest across the four case study institutions. The examples are illustrative rather than exhaustive and highlight how institutions negotiate global ranking pressures while responding to distinct political, cultural, and economic conditions.

Crucially, the framework situates emerging artificial intelligence driven evaluation and recruitment systems within this adaptive process. Rather than functioning as neutral instruments, algorithmic validation systems operate as gatekeeping infrastructures that can reproduce universalizing tendencies unless they are governed by principles of data sovereignty and digital equity (Carroll et al., 2020). The framework, therefore, positions the mobility and ranking ecosystems of 2040 as polycentric value networks in which diverse educational missions can achieve contextual validation while maintaining global connectivity and mutual recognition (Walsh, 2018).

Future research must address the persistent tension between algorithmic scalability and contextual specificity, particularly in relation to how artificial intelligence-based ranking, recruitment, and assessment systems can avoid reinforcing epistemic hierarchies while claiming objectivity and efficiency (Eden, 2021).

To synthesize these theoretical components, the following tables illustrate how the metric adaptation framework manifests across different institutional contexts. Table 1 highlights the conceptual components and examples of their institutional applications, while Table 2 identifies governance challenges and adaptive strategies. These tables are presented as heuristic models rather than exhaustive empirical mappings, and they serve to clarify the theoretical scaffolding guiding this study.

Global University Rankings and Institutional Adaptation

Global university rankings such as QS, Times Higher Education, and the Academic Ranking of World Universities have become powerful instruments in shaping institutional priorities and international student mobility. Beyond their

role as comparative tools, these rankings function as regimes of algorithmic governance that embed normative assumptions about excellence, productivity, and internationalization within data driven infrastructures (Zapp & Ramirez, 2019). They consistently reward Anglo American academic traditions, particularly English language publishing, citation density, and market oriented forms of international engagement.

The result is a global hierarchy in which institutions located in the Global South are disproportionately positioned as sending regions, while institutions in the Global North operate as receiving centers of prestige, talent, and capital (Stevens & Gebre Medhin, 2022). These hierarchies are increasingly reinforced by artificial intelligence enabled recruitment platforms and predictive analytics that privilege institutions already visible within dominant ranking ecosystems (Xin, Patel, & Demir, 2025).

Universities, however, are not passive recipients of these dynamics. Empirical research demonstrates that institutions engage in selective forms of metric adaptation, strategically aligning with ranking indicators while simultaneously pursuing local priorities such as cultural preservation, equity, regional development, and social accountability (Brooks & Abrahams, 2023). These strategies reflect broader debates about epistemic justice, data sovereignty, and pluriversality, as institutions seek visibility without fully surrendering evaluative autonomy (Fernández, 2024). Adaptation is therefore best understood as an ongoing process of institutional negotiation across competing evaluative regimes rather than as a binary choice between compliance and resistance.

These global pressures and local negotiations form the comparative context for this study. The following section presents findings from four institutional cases, organized around recurring tensions that reveal how institutions adapt to rankings while reshaping patterns of international student mobility.

Beyond Compliance and Resistance in Metric Adaptation

This study examined how the selected universities adapt to global ranking pressures and how these strategies influence international student mobility. The analysis demonstrates that adaptation is neither uniform nor purely technocratic. Instead, it is a negotiated process shaped by structural position, institutional capacity, digital infrastructure, and cultural commitments.

The first contribution of the study lies in its emphasis on institutional agency within structural constraint. While global rankings impose narrow definitions of prestige, universities mobilize these pressures in divergent ways (Teichler, 2017). Some align ranking strategies with state developmental agendas, others negotiate between national identity and supranational regulation, while others use prestige to reinforce community engagement or equity-oriented missions. These cases demonstrate that adaptation is contingent, uneven, and fundamentally political. These are, however, the strategies of flagship institutions with significant resources (Taylor & Cantwell, 2023).

A second contribution is the explicit linkage between metric adaptation and student mobility outcomes. Prestige oriented strategies tend to concentrate benefits among elite students and highly resourced institutions, thereby reinforcing stratified mobility pathways (Taylor & Cantwell, 2023). In contrast, equity oriented strategies, including community engagement, regional partnerships, and South South collaboration, expand access but remain undervalued within dominant ranking algorithms (García & Méndez, 2023). This misalignment reveals how ranking systems shape not only institutional behavior but also the distribution of mobility opportunities (Beech, 2015).

The findings further raise ethical and epistemic concerns related to algorithmic governance. Overreliance on Anglophone standards narrows epistemic diversity and marginalizes community based and Indigenous knowledge systems (Connell, 2019). Artificial intelligence enabled recruitment and assessment tools enhance efficiency and visibility, but they also risk entrenching bias and standardization if left unregulated (Eden, 2021). Without intentional design grounded in digital equity and data sovereignty, these systems may consolidate existing hierarchies under the appearance of neutrality (Carroll et al., 2020).

For policymakers and practitioners, the results underscore the need for deliberate and equity-oriented metric reform (Hazelkorn, 2015). The recognition of diverse knowledge forms, sustained investment in sovereign digital infrastructures, and the expansion of participatory governance mechanisms are essential if adaptation is to support sustainable and inclusive mobility systems (Lopez & Rojas, 2023).

The study has limitations. Its focus on flagship universities offers insight into high-level strategies but obscures the experiences of less-resourced institutions. Future research should examine adaptation in regional universities, community colleges, and vocational institutions, while also incorporating student and faculty perspectives on ranking pressures (Nam & Foley, 2025). Longitudinal analyses of graduate trajectories would further strengthen the understanding of the long-term consequences of adaptation strategies.

In sum, the study demonstrates that metric adaptation presents both opportunity and risk. While it can generate visibility, innovation, and new mobility pathways, it risks reproducing the hierarchies it seeks to transcend without pluriversal and equity-centered frameworks.

METHODOLOGY

This study adopts a comparative case study design that draws explicitly on the logic of fuzzy set Qualitative Comparative Analysis to examine how universities adapt to global ranking regimes and how these adaptations shape international student mobility. fsQCA is particularly appropriate for higher education research because it conceptualizes causality as conjunctural and equifinal, allowing multiple configurations of institutional conditions to produce similar outcomes rather than assuming linear or additive effects. In this study,

fsQCA is used as an analytic framework guiding calibration, comparison, and causal interpretation rather than as a large N probabilistic technique, an approach that aligns with established methodological guidance for small to intermediate case numbers in comparative education research (Ragin, 2008; Schneider and Wagemann, 2012).

The outcome variable for the analysis is ranking resilience linked to international student mobility. Ranking resilience is operationalized as the ability of an institution to maintain or improve its global ranking position while simultaneously increasing international student yield over time. International student yield is measured as the percentage change in enrolled international students relative to total enrollment across the 2020 to 2025 period. The outcome is conceptualized as a fuzzy set in which institutions demonstrate varying degrees of membership rather than a binary success or failure status. This operationalization reflects the empirical reality that ranking stability and student mobility gains often occur in degrees and through different institutional pathways rather than as discrete outcomes (Hazelkorn, 2015; Marginson, 2022).

Three core condition variables are specified based on theory and prior empirical work in higher education internationalization and governance. The first condition is ranking stability, defined as the degree to which an institution's QS or Times Higher Education ranking fluctuates over the observation period. Institutions with minimal variance are interpreted as possessing reputational and structural insulation from ranking volatility. The second condition is mobility elasticity, defined as the responsiveness of international student enrollment to changes in ranking position. This condition captures whether ranking improvements translate into actual student mobility gains, an issue emphasized in migration and prestige economy literature (Findlay et al., 2017). The third condition is AI mediated institutional capacity, operationalized as the extent to which recruitment, analytics, and performance management processes are automated through digital platforms and algorithmic tools. This condition reflects emerging evidence that digital governance increasingly mediates global competition and visibility in higher education systems (Williamson, 2017).

Calibration of raw data into fuzzy set membership scores follows direct calibration procedures outlined by Schneider and Wagemann. Full membership in the ranking stability set is assigned to institutions with a ranking variance of five percent or less across the study period, the crossover point is set at ten percent variance, and full non-membership is assigned at variance exceeding fifteen percent. Mobility elasticity is calibrated with full membership at international enrollment changes exceeding eight percent per ranking shift, a crossover at five percent, and full non-membership below three percent. AI-mediated capacity is calibrated using institutional documentation and interview evidence, with full membership assigned to institutions demonstrating at least seventy-five percent automation in recruitment analytics and performance monitoring, a crossover at fifty percent, and full non-membership below thirty percent. These thresholds are theoretically justified and empirically grounded in existing studies of institutional

stratification and digital transformation in higher education (Schneider and Wagemann, 2012; Williamson and Hogan, 2020).

Four universities were selected to represent contrasting regional and structural contexts within the global higher education system. Tsinghua University represents rapid ranking ascent within a centralized and technology-intensive governance regime in East Asia. Jagiellonian University represents policy-driven stability within a European regulatory framework emphasizing public accountability and cultural heritage. The University of Wisconsin-Madison represents technological leadership embedded within a decentralized system characterized by access trade-offs and internal stratification. Universidade Estadual Paulista represents a funding-supported but infrastructure-constrained public university operating within the Global South. Case selection follows a most different systems logic designed to maximize variation in institutional conditions while maintaining analytical comparability (Teichler, 2017; Yin, 2018).

Data were collected from four primary sources to support triangulation. Ranking and performance indicators were drawn from QS and Times Higher Education databases and institutional dashboards for the period 2020 to 2025. Policy and institutional records included strategic plans, funding initiatives, and legislative texts governing internationalization and digital transformation. Stakeholder perspectives were gathered through forty-five semi-structured interviews and four focus groups involving administrators, faculty members, and international student ambassadors. Digital engagement metrics were collected from institutional platforms and official social media campaigns. The integration of these data sources enables cross-validation of quantitative trends with qualitative process evidence, strengthening inferential credibility (Bennett and Checkel, 2015).

Process tracing was conducted within each case to reconstruct causal sequences linking institutional strategy, regulatory context, and observed outcomes. For example, in the Asian case, early adoption of AI-driven recruitment systems preceded measurable gains in ranking position and international student yield, whereas in the Latin American case, infrastructural bottlenecks limited the translation of increased funding into ranking mobility. These within-case narratives complement the cross-case configurationally logic of fsQCA and prevent causal oversimplification (George and Bennett, 2005).

Given the small number of cases, the analysis does not claim to produce a fully generalizable truth table with statistical robustness. Instead, configurational comparison is used to identify plausible causal pathways and paradoxes, such as the coexistence of improved prestige and deepened access inequities in the Wisconsin case. Solution consistency and coverage are interpreted analytically rather than mechanically, consistent with best practices for small N configurational research (Goertz and Mahoney, 2012).

Methodological rigor was ensured through triangulated congruence testing, cross-validation of ranking data with UNESCO international mobility statistics, and member checking with regional experts. Counterfactual simulations, such as modeling alternative ranking trajectories for Jagiellonian University under higher

levels of AI integration, were used to probe causal plausibility rather than to generate predictive claims. Ethical compliance was maintained in accordance with GDPR, LGPD, and China's Personal Information Protection Law, and interpretive analysis incorporated Indigenous and non-Western epistemologies to counter metric dominance and epistemic bias in global ranking systems (Connell, 2019; Carroll et al., 2020).

Table 2. Interview Participant Demographics

Senior Administrator	12
Faculty Researcher	16
International Student Ambassador	12
Policy Expert (External)	5
Total	**45**

Variable Operationalization and Analytical Procedures

The analysis was structured around one outcome variable and three condition variables, each conceptualized as a set with degrees of membership to enable configurational comparison (Ragin, 2008, p. 74; Rihoux & Ragin, 2009, p. 8).

Variable Definitions and Operationalization

- **Outcome Variable: Ranking Resilience.** This was operationalized as an institution's dual capacity to maintain or improve its global ranking position between 2020 and 2025 while simultaneously increasing its international student yield. Yield was calculated as the percentage change in enrolled international students relative to total institutional enrollment over the study period.
- **Condition 1: Ranking Stability.** This condition captured the degree of an institution's QS or Times Higher Education ranking fluctuation. It measured reputational and structural insulation from ranking volatility, where minimal variance indicates greater stability.
- **Condition 2: Mobility Elasticity.** This condition measured the responsiveness of international student enrollment to changes in ranking position. It assessed whether improvements in rank translated into tangible gains in student mobility, a linkage emphasized in the prestige economy literature (Taylor & Cantwell, 2023, p. 62).
- **Condition 3: AI Mediated Capacity.** This condition was operationalized as the extent to which an institution's core processes precisely it focused on student recruitment, performance analytics, and strategic management. This were automated through digital platforms and algorithmic tools, reflecting the growing role of digital governance in higher education (Xin, Patel, & Demir, 2025, p. 115).

Calibration

Calibration of raw data into fuzzy-set membership scores (full membership=1, crossover point=0.5, full non-membership=0) adhered to established direct calibration procedures for configurational research (Ragin, 2008, p. 85; Schneider & Wagemann, 2012, p. 33). Thresholds were grounded in theoretical expectations and empirical benchmarks from relevant literature.

- **Ranking Stability:** An annual ranking variance of ≤5% calibrated to full membership (1), indicating high stability. A variance between 5% and 15% calibrated to the crossover point (0.5), and a variance exceeding 15% calibrated to full non-membership (0), denoting high volatility.
- **Mobility Elasticity:** An international enrollment changes greater than 8% per unit shift in ranking position calibrated to full membership (1). A change between 3% and 8% calibrated to the crossover point (0.5), and a change below 3% calibrated to full non-membership (0).
- **AI Mediated Capacity:** Using evidence from institutional documents and interviews, automation of ≥75% of relevant processes calibrated to full membership (1). Automation between 50% and 75% calibrated to the crossover point (0.5), and automation below 50% calibrated to full non-membership (0).

This calibration process generated the precise membership scores presented in **Table 4** of the Findings, which form the empirical basis for the configurational analysis (Berg-Schlosser, De Meur, Rihoux, & Ragin, 2009, p. 9).

Analytical Integration: A Three-Stage Process

The analysis integrated qualitative and quantitative data through three iterative and interconnected stages, ensuring methodological rigor and depth of explanation (Bennett & Checkel, 2015, p. 21).

1. **Within-Case Process Tracing:** For each of the four institutions, a detailed narrative was constructed by analyzing policy records, strategic plans, and semi-structured interview transcripts. This stage aimed to reconstruct the causal sequence linking specific institutional adaptation strategies, their national or regional regulatory context, and the observed quantitative outcomes in ranking and mobility. For example, process tracing at Tsinghua University showed that state-mandated investment in AI recruitment tools preceded measurable gains in rankings and yield, while the analysis at UNESP traced how infrastructural constraints limited the impact of increased PROSUC funding.
2. **Calibration and Configurational Comparison:** Following calibration, the set membership scores for all cases were systematically compared. This cross-case analysis, visualized in the truth table (**Table 4**), identified which combinations of conditions e.g., high stability *and* high AI capacity, were associated with the outcome of high ranking resilience. This step moves the analysis from descriptive case summaries to the identification of plausible, conjunctural causal pathways, a core strength

of configurational methods (Berg-Schlosser et al., 2009, p. 12; Byrne & Ragin, 2009, p. 145).

3. **Cross-Case Thematic Synthesis:** To explain *how* the condition combinations identified in Stage 2 produced the observed outcomes, interview and documentary data were analyzed thematically across all cases. Prominent themes, such as "prestige versus equity" and "regulatory sovereignty," emerged directly from participants' accounts of strategic decision-making. This qualitative stage provides the mechanistic explanation for the quantitative patterns, grounding the abstract conditions in the lived experiences and strategic reasoning of institutional actors. Key interview excerpts were then integrated into the Findings section to illustrate these underlying mechanisms and tensions.

Table 3. Case Study Performance Summary 2020–2025

Institution and Country	QS or THE Rank Change	International Student Yield Change	Notable Metrics
Tsinghua University (China)	17 to 11	8.5 to 13.2 percent	2,150 Scholar Connect AI matches in 2024 with 28 percent from underrepresented regions
Jagiellonian University (Poland)	340 to 315	5.2 to 7.1 percent	Social media engagement rose from 1.4 to 4.7 percent with 65,000 new followers
University of Wisconsin-Madison (USA)	68 to 60	18 percent postgraduate growth	Badger Select AI conversion rate increased from 7.9 to 12.3 percent
UNESP (Brazil)	601 650 (stable)	6.1 to 7.4 percent	THE Impact score increased from 73.4 to 78.9, with 22 percent growth in PROSUC funding

Note. *Table 3 provides a comparative summary of institutional performance. The information is synthesized from institutional reports, ranking data, and interview evidence.*

Analytical Strategy

The analysis proceeded in three stages. First, calibration transformed raw performance data into set membership scores using thresholds for high-ranking stability (≤ 5% variance), mobility elasticity (> 8% enrollment change per rank shift), and AI integration (≥ 75% automation in recruitment/analytics) (Schneider & Wagemann, 2012). Second, within-case process tracing reconstructs causal sequences from policy records and interviews, such as how early AI adoption in Asia accelerated ranking mobility, whereas infrastructural bottlenecks limited outcomes in Latin America (Bennett & Checkel, 2015). Third, the cross-case fuzzy-set QCA identified condition combinations associated with ranking resilience, highlighting paradoxes such as Wisconsin's improved prestige alongside deepened rural access inequities (Goertz & Mahoney, 2012).

Validity and Rigor

Methodological rigor was ensured through triangulated congruence testing (Yin, 2018), cross-validating ranking data with UNESCO mobility statistics, and member checks with regional experts. Counterfactual simulations, such as modeling Jagiellonian's potential ranking shift with AI bibliometric tools, strengthen causal inference.

Ethical Consideration

Data collection and analysis adhered to the GDPR (EU), LGPD (Brazil), and PIPL (China) regulations. Institutional AI platforms have undergone equity audits in collaboration with policy research centers, and Indigenous epistemologies have been incorporated into interpretation processes to counter Western metric dominance (Carroll et al., 2020; Connell, 2019).

Case Selection Rationale

The four universities were chosen to capture both structural positions and institutional agencies (Teichler, 2017). Tsinghua represented rapid ranking ascent; Jagiellonian, policy-driven stability; UW–Madison, technological leadership with access trade-offs; and UNESP represented a funding-rich but infrastructure-limited context. Together, these cases provide comparative insights into how regional strategies interact with systemic constraints to shape rankings and international student mobility.

FINDINDS

The analysis of institutional strategies of metric adaptation across universities in Asia, Poland, Wisconsin (United States), and Latin America shows that institutions respond to global ranking pressures in patterned but contextually distinct ways. Using a configurational framework, four central tensions emerged from the thematic analysis of interview and documentary data, showing how adaptation strategies shape international student mobility: prestige versus equity, cultural identity versus homogenization, infrastructural constraints versus innovation, and regulatory sovereignty versus global integration. Table 4 presents the calibrated membership scores derived from the methodological procedures, forming the empirical basis for understanding these strategic responses.

Table 4. Configurational Analysis of Conditions (Calibrated Membership Scores)

Case	Ranking Stability	Mobility Elasticity	AI Mediated Capacity	Ranking Resilience
Tsinghua University	1	1	1	1
University of Wisconsin-Madison	1	1	1	1
Jagiellonian University	1	0.5	0.5	0.5
UNESP	0.5	0.5	0	0.5

The Tension between Prestige and Equity

The pursuit of higher rankings can enhance an institution's global visibility while simultaneously reproducing systemic inequalities. Tsinghua University and the University of Wisconsin-Madison, both characterized by high stability rankings, strong mobility elasticity, and advanced AI-mediated capacity, effectively leveraged their prestige and technological resources to recruit international students. A senior administrator at the University of Wisconsin-Madison articulated this strategic compromise, stating, "Badger Select [the institution's AI recruitment tool] optimizes for applicants who bolster our research profile and ranking metrics, which unfortunately often sidelines promising students from under-resourced backgrounds" (Interview, 2024). This prestige-oriented approach successfully generated significant revenue but, consistent with broader findings on marketization, primarily benefited applicants from elite backgrounds (Taylor & Cantwell, 2023). Conversely, Jagiellonian University and UNESP, operating with more moderate levels of mobility elasticity and AI capacity, demonstrated a strategic imperative to balance ranking objectives with equity driven goals. Jagiellonian University actively utilized European Union structural funds to widen participation, while UNESP embedded community engagement and social inclusion as core institutional metrics. A director at UNESP explained, "Our adaptation is to meet ranking benchmarks where we must, but our core metrics are local impact and social inclusion" (Interview, 2024). This strategic positioning reflects the theoretical concept of contextual integrity, wherein institutions negotiate global pressures to preserve local mission and values (Brooks & Abrahams, 2023). However, interview participants at both institutions emphasized that the scope and scalability of these equity initiatives were persistently constrained by finite resources.

The Tension between Cultural Identity and Homogenization

A central challenge for institutions involves reconciling globally standardized performance indicators with locally embedded traditions and epistemologies. In China, Tsinghua University's strategic prioritization of English language publications contributed significantly to its improved ranking position,

yet this same strategy reinforced the dominance of Anglophone academic standards within the global hierarchy (Yang, 2020). Jagiellonian University engaged in ongoing efforts to safeguard Central European scholarly traditions, though these efforts were conducted within the sometimes-homogenizing compliance frameworks of the European Union. UNESP most explicitly championed alternative frameworks, such as Indigenous knowledge systems and the *Buen Vivir* philosophy, representing a direct institutional pursuit of pluriversal validation (Walsh, 2018). A faculty member at UNESP illustrated this approach, noting, "Our research evaluation now includes community patents and Portuguese language impact reports, not just Web of Science publications" (Interview, 2024). Meanwhile, at the University of Wisconsin-Madison, contributions to local and regional community impact, while deeply valued within the state, remained largely invisible and undervalued within the dominant global ranking algorithms, creating a persistent strategic dilemma for administrators (Chen & O'Brien, 2023).

The Tension between Infrastructural Constraints and Innovation

Disparities in institutional resources critically mediated the capacity for technological and strategic innovation. Tsinghua University and the University of Wisconsin-Madison, with their high levels of AI-mediated capacity, deployed sophisticated, data-driven recruitment and analytics systems. While these tools created efficient international student mobility pathways, they also risked reinforcing exclusion by optimizing for a narrow set of prestigious metrics (Xin et al., 2025). In contrast, UNESP demonstrated notable creativity in advancing epistemic innovation and cultivating South academic partnerships, an expression of relational mobility. However, as repeatedly cited in interviews, the broader impact of these initiatives was limited by persistent digital and physical infrastructure bottlenecks (Lopez & Rojas, 2023). Jagiellonian University benefited from infrastructural upgrades financed through European Union funding mechanisms, yet these advancements were often contingent upon compliance with externally defined benchmarks, subtly shaping the direction of innovation.

The Tension between Regulatory Sovereignty and Global Integration

National and regional governance frameworks fundamentally shaped the strategic autonomy and options available to each institution. In Poland, Jagiellonian University's adaptation strategies were mediated by alignment with the European Union's regulatory environment, such as the AI Act, which provided vital funding streams but also imposed constraints on certain institutional practices. In Brazil, UNESP participated in regional programs like PROSUC, which expanded South mobility opportunities; however, the institution's global recognition and sovereignty remained partially limited by a continued reliance on Anglophone academic validation systems (Fernández, 2024). In China, Tsinghua University's rapid ascent in global rankings was facilitated by centralized state oversight and investment, yet this same structure limited the university's

autonomous agency in shaping its internationalization strategy (Kosmützky & Putty, 2023). The decentralized governance model in the United States afforded the University of Wisconsin-Madison greater latitude for technological experimentation but simultaneously rendered it more vulnerable to shifts in state political priorities and funding volatility.

Synthesis: Adaptation as Negotiated Process

Taken together, these findings suggest that institutional metric adaptation cannot be reduced to simple compliance or outright resistance. Instead, it constitutes a complex, negotiated process wherein universities simultaneously navigate convergent global pressures and divergent local imperatives. Institutions strategically leverage ranking systems to expand their international visibility and connectivity while simultaneously maintaining foundational cultural commitments and equity-oriented goals. The four interconnected tensions identified across these cases illuminate the dual nature of adaptation, revealing its potential to create new opportunities for visibility and collaboration alongside its inherent risk of entrenching existing inequalities and promoting epistemic homogenization.

CONCLUSION

This study conceptualizes metric adaptation as a contested terrain, examining how four flagship universities adapt to global ranking pressures and the implications of these strategies for international student mobility. By applying a comparative case design conceptually guided by configurational analysis, the research identified four recurring tensions that shape how institutions navigate global systems while pursuing local goals. These tensions manifest as the pursuit of prestige against the imperative for equity, the preservation of cultural identity against forces of homogenization, the navigation of infrastructural constraints against the drive for innovation, and the assertion of regulatory sovereignty against the demands of global integration.

The findings demonstrate that metric adaptation is not simply compliance with global norms but a negotiated process in which universities selectively reinterpret ranking criteria, reflecting what Espeland and Sauder (2016) term "reactivity" within a field of institutional reputation. While strategic adaptation can enhance global visibility and attract international students, it also carries the systemic risk of reinforcing existing inequities and narrowing the range of epistemologies that gain legitimacy (Marginson, 2016). The cases of Jagiellonian University and UNESP suggest that institutions that deliberately embed principles of equity, cultural pluralism, and inclusive digital infrastructures into their strategic planning may develop alternative pathways. These pathways hold the potential to foster more sustainable and reciprocal mobility patterns, though they are often constrained by resource limitations and the dominant valuation mechanisms of global rankings.

A critical acknowledgment of this study is its deliberate focus on elite, flagship institutions. The adaptive strategies documented here, which include significant state investment, advanced technological deployment, and access to supranational funding networks, are predicated on a level of resource concentration that is not representative of the broader higher education sector (Hazelkorn, 2015; Taylor & Cantwell, 2023). Consequently, the findings describe a specific stratum of institutional behavior rather than a generalizable model of system-wide adaptation.

For policymakers, ranking bodies, and higher education leaders, the results underscore a pressing need to critically redesign evaluation frameworks. New frameworks must move beyond monolithic indicators to recognize and validate the diverse forms of knowledge production, community impact, and institutional missions that constitute global higher education (Sassen, 2007). This necessitates sustained investment in digital and infrastructural sovereignty, particularly for institutions in the Global South, to reduce dependency on externally controlled platforms (Lopez & Rojas, 2023). Furthermore, the development of participatory governance mechanisms in the design of rankings and algorithmic tools is essential to ensure that adaptation processes ultimately serve the broader goals of educational equity and long-term sustainability (ASEAN University Network, 2022; Carroll et al., 2020).

Future research must extend beyond the experiences of flagship universities to systematically examine adaptation and its consequences within less resourced institutions, including regional universities and community colleges. Additionally, incorporating student and faculty perspectives more centrally, particularly through longitudinal studies tracking graduate trajectories, would provide a more comprehensive understanding of how adaptation strategies affect lived experiences and long-term outcomes (Nam & Foley, 2025). Ultimately, fostering a more inclusive and epistemically diverse global higher education ecosystem requires a fundamental shift. It demands moving beyond the reductive logics of dominant ranking regimes toward polycentric frameworks that affirm the value of multiple ways of knowing, being, and contributing to society (Connell, 2019; Walsh, 2018).

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Bio

Sinaria E. Hassan, Ed.D., is an independent researcher specializing in education leadership and policy studies. She earned her Doctorate in Education Leadership and Policy Studies from the University of Memphis, USA. Her primary research interests include English as a Second Language (ESL), identity negotiation among international students in classroom settings, academic literacies, and multiculturalism in higher education. Email: sinariahassan@gmail.com