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RESEARCH ARTICLE

Strategic governance and institutional development in Azerbaijan's higher education sector: Insights from a comparative swot analysis

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Keywords

higher education governance; SWOT analysis; institutional theory; Azerbaijan; post-Soviet reform; comparative higher education; Bologna Process

Abstract

The strategic governance of transitional higher education systems remains a relatively under-researched aspect of institutional development, especially in the post-Soviet South Caucasus region. This study aims to analyze the strategic governance conditions and competitive position of universities in Azerbaijan using a structured comparative SWOT analysis based on institutional theory. A qualitative multiple-case design was used, with systematic content analysis of 20 institutional documents from five purposively selected universities, and one-way ANOVA, OLS longitudinal regression, and strategic benchmarking with 33 comparator institutions in six countries. Inter-coder reliability was confirmed at Cohen's $\kappa = .81$, and SWOT findings were validated through a two-round Delphi procedure with nine regional experts. The results showed significant intra-system variation for all eight governance indicators and large effect sizes across the board ($\eta^2 = .349-.763$). Azerbaijani universities showed considerable gaps compared to their regional counterparts in terms of staff doctoral qualification ratio ($d = 2.02$), research publications ($d = 1.84$), and internationalization indicators ($d = 1.90$). Longitudinal analysis revealed that QA maturity was the only improvement common to

all institutional types, whereas research capacity improvements were limited to semi-autonomous and research-oriented institutions. The results indicate that formal Bologna compliance contributes to the convergence of quality assurance but is not sufficient for developing research capacity. The findings provide empirical data for international discussions on governance-autonomy relations in transitional higher education systems and have direct implications for institutional reform policy in Azerbaijan and similar post-Soviet settings.

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1. INTRODUCTION

Higher education systems across the post-Soviet region have undergone substantial structural transformation since the early 1990s, shaped by market liberalization and supranational policy alignment (Osipian, 2020; Sabzalieva, 2018). Azerbaijan is a particularly instructive case in this regional development trajectory, as a resource-rich, geopolitically strategic nation that has been trying to undertake ambitious higher education reforms while simultaneously dealing with an inherited Soviet institutional logic and the competitive push of a globalized knowledge economy (Kudryachenko & Soloshenko, 2021; Varani, 2018). Azerbaijan formally acceded to the Bologna Process in 2005 and has been working to align its degree systems, credit systems, and quality assurance practices with European standards. However, the extent to which this has led to substantive changes in institutions has not been studied in detail (Jafarova, 2024; Mammadova & Valiyev, 2020).

The importance of strategic governance in developing institutional capacity has received increasing research attention. Universities have become active players rather than static recipients of national policy, with their institutional governance systems, leadership ability, and decisions about resource allocation expected to shape institutional performance and positioning (Llor Ávila & Murillo Rosado, 2024; Luo et al., 2024). Competitive positioning, through the use of SWOT analysis and other strategic planning frameworks, has been used in various national contexts as a diagnostic tool to evaluate the competitive position (Devi et al., 2022; Motorniuk et al., 2025). However, SWOT applications in higher education studies have often been condemned because of their descriptive focus, lack of methodological clarity, and reluctance to systematically compare across cases (Hestivik et al., 2026).

The number of comparative studies on institutional strategies in transitional systems is still very limited. Scholarship on reform in Eastern Europe is relatively well-developed (Poland, Hungary, the Czech Republic, and the Baltic states), while the South Caucasus region has been studied in a relatively limited way in mainstream academic literature (Niftiyev, 2022; Plasser et al., 1998). This is a relevant gap. However, the strategic challenges of the higher education system in Azerbaijan are defined by specific conditions: the dominance of the state funding model, a relatively small private sector, the relative weakness of research output compared to the size of enrolments, and an emerging internationalization agenda, which are unlikely to be shared by other higher education systems studied in greater detail elsewhere (Abasova & Aliyeva, 2024; Rajab, 2024).

Furthermore, the existing literature has focused exclusively on case studies from individual institutions and system-level surveys that fail to capture meaningful intra-system variations (Abasova & Aliyeva, 2024; Chunayev, 2024). A comparative multi-case approach provides a methodological benefit for identifying patterns that emerge from common institutional environments and revealing the unique strategic dynamics of specific universities (Cai, 2024). This study focused on the mentioned gaps, aiming to analyze the strategic governance conditions and competitive positioning of Azerbaijani universities using a SWOT analysis approach with a structured comparative approach based on Institutional Theory (Dong et al., 2020; Luo et al., 2024). Institutional Theory focuses on the normative, regulative, and cognitive influences on organizational behavior in overlapping institutional spaces and provides a framework to account for the isomorphisms and strategic differences between universities in the same national field (Ergin Kocatürk & Karadağ, 2021).

This study is based on a methodical analysis of strategic planning documents, institutional self-assessment reports, national policy documents, and international rankings of universities that were selected based on purpose. The first research question aims to identify the main strengths and weaknesses of strategic governance and institutional development in universities in Azerbaijan first

research question is: What are the main strengths and weaknesses of strategic governance and institutional development in universities in the Republic of Azerbaijan? RQ2: How do the international and national higher education landscapes offer external opportunities and risks for Azerbaijani universities? RQ3: What are the differences between the strategic profiles of universities in Azerbaijan by type, and what do these differences mean for governance reform?

2. LITERATURE REVIEW

There are approximately 50 institutions of higher education in Azerbaijan, of which 17 are state-funded (Ministry of Education of the Republic of Azerbaijan, 2023). Although gross enrolment ratios have increased significantly over the last decade, research productivity (in terms of international publications) remains below that of its regional counterparts (Alasgarova, 2025). The areas of quality enhancement, research capacity building, and internationalization are among the priorities of the State Programme on Education Development 2023–2027, thereby increasing the importance of strategic governance of institutions in this policy context (Ministry of Education of the Republic of Azerbaijan, 2023) (Abdullayev, 2019; Valiyev & Asgarova, 2024). Although this study is set in one national context, the results will be useful in the larger international discussion on strategic governance and institutional change in transitional higher education systems. The remainder of this paper is organized as follows: Section 2 focuses on the methodological framework. The comparative SWOT results are presented in Section 3. The results are discussed in relation to the literature and theoretical framework in Section 4. Finally, Section 5 presents the conclusions and implications of this study.

2.1. Theoretical Framework

This research is based on Institutional Theory, which views universities as organizations whose governance systems and strategic actions are driven by regulative, normative, and cognitive pressures in the shared institutional area (Cai, 2024; Dong et al., 2020; Luo et al., 2024; Najafov, 2025). It has been found to be well applied to the institutional conditions of higher education systems in transition, such as those of the former Soviet Union, where a combination of Soviet logics and incoming Bologna-driven normative pressures leads to institutional complexity that is not easily captured by rational choice or resource-based approaches (Capano 2022; Donina and Hasanefendic 2018; Najafov, 2025).

This study implements two isomorphic mechanisms that are fundamental to Institutional Theory. Coercive and normative isomorphisms (state funding dependencies and regulatory compliance; Bologna participation and quality assurance professionalization) are seen as the major forces influencing identified institutional strengths and weaknesses, with opportunities and threats as the wider external field (Kocatürk & Karadağ, 2021; Hestivik et al., 2026; Ahmadov et al., 2026; Ismayil et al., 2026; Nuri et al., 2025; Nuri et al., 2026). Here, SWOT is not a description of a management process but rather a structured tool to define the differential nature of these pressures in relation to institutional types.

Critically, this study considers intra-system variation to be an empirical puzzle in situations where isomorphism theory suggests convergence among organizations in a common national field. Governance autonomy is considered a mechanism that allows strategic decoupling as an ability of individual universities to selectively interpret and diverge from field-level norms (Donina & Hasanefendic, 2018; Frølich et al., 2018), which includes RQ3. This positioning aligns with the critical realist ontological approach: observable outputs of organizations (such as strategic plans, publication frequency, and QA structures) are seen as surface manifestations of deeper structural conditions in the organizations. In addition, the constructivist-interpretivist approach to documentary evidence acknowledges texts as legitimacy-seeking rather than neutral depictions of institutional realities (Cai, 2024; Luo et al., 2024).

3. METHODOLOGY

3.1 Research Design and Philosophical Positioning

The study was conducted from a critical realist ontological perspective, meaning that there is an objective institutional reality that does not depend on the observer and is theoretically mediated. This perspective is well-suited to institutional analysis in the field of higher education, where observable organizational behaviors (such as strategic plans and quality assurance mechanisms) can be interpreted as visible manifestations of deeper structural organizational processes, such as coercive isomorphism and normative professionalization.

Epistemologically, the study is constructivist-interpretivist about the documentary evidence, to understand that the self-assessment and institutional strategic plans are socially constructed texts that are influenced by a concern with issues of legitimacy rather than representing an accurate snapshot of institutional reality. The general design was based on a qualitative comparative

multiple case study approach. This design allows for both within-case and cross-case analyses of each university's strategic profile and the identification of patterns and contrasts between universities.

This suits the purpose of the study, which is to develop analytical, not statistical, generalizations about governance conditions in the Azerbaijani higher education sector. The selection of cases is based on the most-similar-systems design principle; that is, institutions that are embedded in a common institutional environment can be expected to have greater variation in the observed strategic profile, which makes it more plausible that this variation is due to institution-level factors.

3.2 Case Selection

The sampling method used to identify institutions was purposive to enable meaningful variation among institutions in Azerbaijan's higher education sector. Four selection criteria were used: (i) institutional mission diversity (comprehensive research-oriented, teaching-intensive, technical-engineering, and specialist professional institutions); (ii) governance structure (institutions under direct ministerial control, as well as more autonomously governed institutions); (iii) internationalization profile (institutions that participate in Erasmus+, offer international degree programmes, and are represented in the regional ranking list); and (iv) data availability (institutions with available strategic plans, annual reports, or self-assessment documents). The selection of universities by applying these criteria resulted in five universities (University A, University B, University C, University D, and University E), in line with the journal's double-blind review policy.

3.3 Data Sources

To increase credibility, data triangulation was used to utilize multiple independent evidence sources to answer the same research questions. Four types of documents were retrieved for this study. The data source for the institutional aspects was institutional strategic documents (Instagram 2018-2023), national accreditation self-evaluation documents, annual institutional reports, and documents prepared according to the European Standards and Guidelines for Quality Assurance (ESG 2015). The second type was national policy documents, such as the Azerbaijan National Qualifications Framework, the Law on Education (2009, amended in 2022; Ahmadov et al., 2026; Ismayil et al., 2026; Nuri et al., 2025; Nuri et al., 2026), and the Azerbaijan Quality Assurance Agency in Education (QAAE) reports.

International ranking and performance data comprised the third category, which was drawn from the QS World University Rankings, Times Higher Education, SCImago Institutions Rankings, and Webometrics (2019 – 2023); in the absence of individual rankings, EdStats system-level indicators at the UNESCO and World Bank were used as proxies. The fourth category consisted of comparative regional and international reports, such as the Eurydice Eastern Partnership report, OECD South Caucasus policy reviews, and Council of Europe Bologna implementation reports. The benchmarking group consisted of 38 institutions in six countries: Azerbaijan (n = 5), Georgia (n = 6), Armenia (n = 5), Poland (n = 8), Czechia (n = 7), and Turkey (n = 7). The comparator systems were chosen to represent both peer contexts from the South Caucasus, with the legacy of the Soviet system of institutions, and from the Eastern European systems, which have progressed through the "Bologna cycle," against which the strategic performance gaps could be assessed.

3.4 Analytical Approach

A systematic qualitative content analysis of all documentary evidence was conducted. The coding method employed was a hybrid deductive-inductive approach, beginning with deductive coding of the four SWOT dimensions and subsequently pilot coding of two institutions to develop a final coding scheme of 28 first-order codes grouped into seven second-order categories. The coding process was undertaken in NVivo 14 in 20 documents (five institutions and four types of documents: strategic plans, self-evaluation reports, annual reports, and mission/vision statements). The documents in Azerbaijani and Russian were professionally translated before analysis.

The inter-coding reliability was calculated on a randomly selected 25% sub-sample for the first time and then again after some category adjustments had been made, with Cohen's $\kappa = .74$ and $\kappa = .81$, respectively. To support the qualitative results, three additional quantitative procedures were employed: (i) one-way ANOVA to assess differences in annual performance across institutions (longitudinal data; n = 75; 2019–2023; 95% CIs reported) for eight governance indicators; (ii) OLS regression to estimate annual performance by institution (longitudinal data; n = 25; 2019–2023; $\alpha = .05$; 95% CIs reported) for each of the eight governance indicators; and (iii) Pearson correlations between the eight governance indicators (n = 75). All quantitative analyses were performed using Python 3.x. The per-institution OLS models are based on analyses with n = 5 annual observations per governance indicator, and the purpose of the analyses is exploratory, not causal. Effect sizes (R^2) and 95% confidence intervals are reported throughout so that the results may be interpreted, given the limited degrees of freedom.

3.5 Analytical Rigour and Methodological Enhancements

To overcome the limitations of SWOT, three improvements were added. The Delphi expert validation process was the first method used, which involved a nine-member panel of higher education policy analysts, Azerbaijani university administrators, and international researchers with regional experience. The 28 draft SWOT items were rated by the panel members on a 5-point Likert scale in two rounds, and consensus was defined as at least 2/3 of the panel members agreeing. Consensus was achieved for 25 of the 28 items in only two rounds. In Round 2, three threat-related items (T4, T5, and T7) came close to the consensus level but did not achieve it, with each showing 66.7% agreement.

Second, SWOT profiles were set in the context of the equivalent performance indicators of comparable institutions and other study institutions in six countries: Georgia, Armenia, Poland, Czechia, and Turkey. To create comparator universities, a set of mission, size, and research output criteria adapted from the Carnegie Classification was used to identify 38 universities in the United States. Third, thematic network analysis was performed using Atlas.ti 23 to represent the structural relationships between the coded themes within and between SWOT dimensions and to allow systematic pattern identification across cases beyond descriptive enumeration.

3.6 Ethics and constraints

All documentary evidence was obtained from public sources. Human participants were involved, and written informed consent was obtained per the ethical guidelines of the author's home institution, and anonymity was guaranteed throughout the Delphi procedure. All institutional names have been anonymized in the text. There are a few caveats to this study. The fact that only documentary evidence is used is indicative of official strategies rather than the practice of the institutions, as future research with interviews with institutional leaders would add a complementary dimension. The five institutions selected for the sample are non-exhaustive but chosen to represent the sector as a whole. Strategic discussions or quality issues that institutions may not have made public are not addressed in publicly available documents. Finally, the cross-sectional design makes it impossible to conduct a longitudinal analysis of the development of strategic profiles.

4. RESULTS

4.1 Descriptive Statistics and Institutional Governance Profiles

Table 1 and Figure 2 show considerable inter-institutional variation on all eight governance indicators, with descriptive statistics across the 75 department-level observations. System-wide, research publications per 100 faculty averaged 11.25 (SD = 5.29, range: 3.35–21.61), the composite governance score averaged 66.45 out of 100 (SD = 7.35, range: 51.1–87.1), international curriculum content stood at 31.65% (SD = 8.34), staff doctoral qualification ratio at 53.19% (SD = 9.27), external funding at 16.78% (SD = 5.29), and international student ratio at 6.25% (SD = 3.09).

The highest mean research output ($M = 17.90$, $SD = 2.30$) and governance score ($M = 74.04$, $SD = 6.15$) were obtained at University A (Comprehensive Research). University E (Semi-Autonomous) led on international curriculum content ($M = 37.31\%$, $SD = 6.44$), international student ratio ($M = 9.90\%$, $SD = 2.57$), and external funding ($M = 21.13\%$, $SD = 4.83$). University B (Teaching-Intensive) had the lowest values in all the fields of research and internationalization indicators, as well as the highest student-to-faculty ratio ($M = 20.97$, $SD = 2.39$). Universities C and D were in between. Figure 2 shows the normalized radar profiles for each dimension across all seven dimensions for each institution.

4.2 Institutional Differences in Governance Indicators

Table 2 shows that there were significant differences among institutions on all eight governance indicators, as revealed by one-way ANOVA ($df_{\text{between}} = 4$, $df_{\text{within}} = 70$, $n = 75$; $\alpha = .05$). Research publications produced the largest effect ($F = 56.40$, $p < .001$, $\eta^2 = .763$), followed by international student ratio ($F = 29.77$, $p < .001$, $\eta^2 = .630$), external funding ($F = 16.66$, $p < .001$, $\eta^2 = .488$), QA maturity ($F = 15.78$, $p < .001$, $\eta^2 = .474$), governance score ($F = 14.53$, $p < .001$, $\eta^2 = .454$), student-to-faculty ratio ($F = 12.53$, $p < .001$, $\eta^2 = .417$), international curriculum ($F = 10.84$, $p < .001$, $\eta^2 = .383$), and staff with PhD ratio ($F = 9.36$, $p < .001$, $\eta^2 = .349$). There were large effects across all η^2 values $> .14$. Pearson correlations ($n = 75$) also indicated that the strongest correlation between research output and the variables was with governance score ($r = .632$), QA maturity ($r = .601$), and international student ratio ($r = .595$); on the other hand, the student-to-faculty ratio was negatively associated with research output ($r = -.545$), governance score ($r = -.399$), and the maturity of QA ($r = -.416$).

4.3 Comparative SWOT Findings:

Content Analysis: A total of 742 coded segments were found within 28 first-order codes and seven second-order categories for the content analysis of 20 institutional documents (Figure 6). The frequencies of coding per institution and SWOT dimension are presented in Figure 6.

Strengths (coded segments: A = 61, B = 53, C = 55, D = 51, E = 63). The analytical weights focused on Governance_Leadership and Research_Output. These themes recurred in the documentary evidence: Bologna degree harmonization (S1), stability in state funding (S2), ESG-aligned quality assurance structures (S5), and the national qualifications framework (S6). University E's documents also highlighted strategic planning maturity (S4) and centralized leadership coordination (S7) at higher rates than their peers from the state sector. Weaknesses (coded segments: A = 35, B = 53, C = 49, D = 61, and E = 26). In terms of weaknesses, University D was the most dominant, with 24 segments (four document types) in the ResearchOutput and Resources categories.

The same pattern was observed for University B; in the case of research output weakness, the code was applied uniformly to six segments per document type. University E had the smallest weakness score, particularly with significantly lower coding in Research_Output (four segments) and Teaching_Intl (six segments). The absence of external funding (W2), lack of links with industry and universities (W5), institutional autonomy (W6), and poor digital infrastructure (W7) were consistently present across the five institutions. Opportunities (coded segments: A = 44, B = 39, C = 44, D = 32, and E = 53). University E had the highest opportunity frequency, with the two dominant ones being Policy_Regulatory (22 segments) and Global_Competition (21 segments).

Global_Competition coding (6 segments) is significantly lower at University D. Investment in the State Programme on Education Development 2023–2027 (O1), the incentives granted in the framework of the Bologna quality reform (O5), and digitalisation investment (O6) occurred across all institutions. Threats (coded segments: A = 40, B = 36, C = 33, D = 29, E = 24). The policy, regulatory, and socioeconomic threat categories had the highest threat frequency for University A, with 13 segments each. University B had a greater threat profile than any other institution, with Global_Competition (19 segments) as the frequency that dominated the threat profile. University E had the shortest threat profile period.

4.4 Delphi Expert Panel Validation

The 28 SWOT items were rated in two rounds (504 ratings) by the nine-member panels. Twenty-five of the 28 items reached $\geq 67\%$ panel consensus in Round 2 (Table 3; Figure 4). All three non-consensus items were in the Threat dimension: Limited global research visibility (T4; Round 2: $M = 3.89$, $SD = 0.78$, 66.7%), South Caucasus geopolitical instability (T5; $M = 3.89$, $SD = 0.78$, 66.7%), and Declining public trust in higher education quality (T7; $M = 3.89$, $SD = 0.78$, 66.7%). Four strength items showed statistically significant round-to-round improvement: S3 ($p = .041$), S4 ($p = .004$), S6 ($p = .009$), and S7 ($p = .036$). In Round 2, all seven weakness items reached 100% consensus; W1 showed significant improvement ($p = .024$). There was a high consensus and significant rating decrease across rounds for digitalization investment (O6) ($M = 4.67$ to $M = 4.11$, $p = .049$). The highest Round 2 means were for brain drain (T2; $M = 4.33$, 88.9%) and rapid accreditation changes (T6; $M = 4.11$, 88.9%) among the items that were considered consensus threats.

4.5 Strategic Benchmarking: Azerbaijan vs Comparator Systems

The results of the Mann-Whitney U tests carried out between the five Azerbaijani institutions and 33 non-Azerbaijani comparator institutions from six countries showed that the statistical differences between institutions were significant in all seven indicators used for benchmarking (Table 4 and Figure 5). The largest deficit was observed in staff doctoral qualification ratio (AZ: $M = 51.36\%$, $SD = 5.14$ vs. comparators: $M = 68.48\%$, $SD = 10.81$; $U = 9$, $p = .002$, $d = 2.023$), followed by research publications (AZ: $M = 7.78$, $SD = 4.81$ vs. $M = 23.18$, $SD = 10.84$; $U = 17.5$, $p = .005$, $d = 1.836$), international student ratio (AZ: $M = 6.62\%$, $SD = 1.81$ vs. $M = 15.00\%$, $SD = 5.97$; $U = 13$, $p = .001$, $d = 1.900$), and international curriculum content (AZ: $M = 31.76\%$, $SD = 1.56$ vs. $M = 50.02\%$, $SD = 14.24$; $U = 7$, $p = .001$, $d = 1.803$). External funding ($U = 20$, $p = .005$, $d = 1.765$), governance score ($U = 30$, $p = .021$, $d = 1.244$), and QA maturity ($U = 31.5$, $p = .029$, $d = 1.225$) also produced significantly large-effect gaps. For all indicators, Cohen's d values were above 1.0.

4.6 Longitudinal Trends in Institutional Performance (2019-2023)

Figure 3 shows the trends in performance, as identified in the OLS regression of the longitudinal dataset ($n = 25$ institution-year observations). Table 5 presents the significant trends in performance found in the OLS regression of the longitudinal dataset ($n = 25$ institution-year observations). University E produced the strongest growth signals: research publications (+1.238/year, $R^2 = .971$, $p = .002$), QA maturity (+0.145/year, $R^2 = .990$, $p < .001$) — the steepest QA trajectory across all institutions staff PhD ratio (+0.660/year, $R^2 = .965$, $p = .003$), and a significant decline in student-to-faculty ratio (−0.210/year, $R^2 = .861$, $p = .023$). University A recorded significant positive trends in research output (+1.213/year, $R^2 = .789$, $p = .044$), QA maturity (+0.110/year, $R^2 = .981$, $p = .001$), and staff-PhD ratio (+0.910/year, $R^2 = .858$, $p = .024$). In addition, there was a significant governance score

increase (+1.610/year, $p = .034$ and +1.780/year, $p = .029$, respectively) for Universities C and D, along with gains in QA maturity. However, only two significant trends were noted at University B: its research output (+1.484/year, $p = .025$) and governance score (+0.782/year, $p = .041$) increased significantly over the five years, but not its QA maturity score.

Table 1. Descriptive Statistics by Institution (2023; $n = 75$ department-level observations)

Variable	Univ. A M (SD)	Univ. B M (SD)	Univ. C M (SD)	Univ. D M (SD)	Univ. E M (SD)	System M	System SD	Min	Max
Research Pubs (per 100 Faculty)	17.90 (2.30)	4.88 (0.95)	12.54 (2.39)	7.48 (2.15)	13.43 (4.30)	11.25	5.29	3.35	21.61
Governance Score (0–100)	74.04 (6.15)	60.16 (7.34)	65.93 (3.44)	62.67 (5.17)	69.47 (5.06)	66.45	7.35	51.1	87.1
Intl. Curriculum (%)	34.53 (7.78)	22.55 (5.51)	29.92 (6.21)	33.95 (7.49)	37.31 (6.44)	31.65	8.34	12.8	48.1
QA Maturity (1–5)	3.83 (0.27)	3.08 (0.32)	3.36 (0.31)	3.33 (0.24)	3.68 (0.31)	3.46	0.39	2.71	4.29
Staff PhD Ratio (%)	59.07 (6.32)	45.21 (8.78)	51.90 (8.22)	50.31 (9.35)	59.48 (4.90)	53.19	9.27	30.1	73.5
External Funding (%)	19.55 (3.45)	10.64 (3.55)	17.42 (3.37)	15.18 (4.06)	21.13 (4.83)	16.78	5.29	3.9	36.2
Student–Faculty Ratio	13.70 (2.98)	20.97 (2.39)	17.87 (3.34)	18.73 (4.19)	15.19 (2.54)	17.29	4.02	8.4	28.8
Intl. Student Ratio (%)	8.30 (2.48)	3.57 (1.10)	5.19 (1.51)	4.27 (1.56)	9.90 (2.57)	6.25	3.09	1.16	15.25

Note. M = mean; SD = standard deviation. Values in parentheses are SDs. University A = Comprehensive Research; University B = Teaching-Intensive; University C = Technical/Engineering; University D = Specialist Professional; University E = Semi-Autonomous.

Table 2. One-Way ANOVA — Institutional Differences in Governance Indicators ($\alpha = .05$; $df_{\text{between}} = 4$; $df_{\text{within}} = 70$)

Variable	F	df_b	df_w	p	η^2	Effect Size	Sig. ($\alpha = .05$)
Research Publications (per 100 Faculty)	56.40	4	70	< .001	0.763	Large	Yes
Governance Score (0–100)	14.53	4	70	< .001	0.454	Large	Yes
Intl. Curriculum (%)	10.84	4	70	< .001	0.383	Large	Yes
QA Maturity (1–5)	15.78	4	70	< .001	0.474	Large	Yes

Variable	F	df_b	df_w	p	η^2	Effect Size	Sig. ($\alpha=.05$)
Staff PhD Ratio (%)	9.36	4	70	< .001	0.349	Large	Yes
External Funding (%)	16.66	4	70	< .001	0.488	Large	Yes
Student–Faculty Ratio	12.53	4	70	< .001	0.417	Large	Yes
Intl. Student Ratio (%)	29.77	4	70	< .001	0.630	Large	Yes

Note. All $p < .001$. η^2 = eta squared (effect size). $\eta^2 \geq .14$ = large effect (Cohen, 1988). df_b = degrees of freedom between groups; df_w = degrees of freedom within groups.

Table 3. Delphi Expert Panel — Consensus Summary (n = 9 experts; 28 SWOT items; 2 rounds; 504 ratings)

Item	Dim.	Description	R1 M	R1 SD	R1 %	R2 M	R2 SD	R2 %	Consensus	p
Strength										
S1	S	Bologna degree harmonisation	4.11	0.78	77.8	4.44	0.53	100.0	Yes	0.305
S2	S	State funding stability	4.22	0.67	88.9	4.22	0.44	100.0	Yes	1.000
S3	S	Doctoral programme capacity	3.89	0.33	88.9	4.33	0.50	100.0	Yes	0.041*
S4	S	Strategic plan adoption rate	3.78	0.44	77.8	4.56	0.53	100.0	Yes	0.004**
S5	S	ESG-aligned QA structures	4.11	0.60	88.9	4.11	0.60	88.9	Yes	1.000
S6	S	National qualification framework	3.67	0.87	44.4	4.67	0.50	100.0	Yes	0.009**
S7	S	Centralised leadership coordination	4.00	0.50	88.9	4.56	0.53	100.0	Yes	0.036*
Weakness										
W1	W	Limited research output per faculty	3.89	0.60	77.8	4.56	0.53	100.0	Yes	0.024*
W2	W	Low external funding ratio	4.56	0.53	100.0	4.44	0.53	100.0	Yes	0.661

Item	Dim.	Description	R1 M	R1 SD	R1 %	R2 M	R2 SD	R2 %	Consensus	p
W3	W	Insufficient curriculum internationalisation	3.89	0.78	66.7	4.11	0.60	88.9	Yes	0.509
W4	W	Staff PhD qualification gap	4.22	0.67	88.9	4.11	0.33	100.0	Yes	0.661
W5	W	Weak industry-university linkages	4.44	0.53	100.0	4.33	0.50	100.0	Yes	0.653
W6	W	Limited institutional autonomy	4.33	0.87	77.8	4.44	0.53	100.0	Yes	0.747
W7	W	Inadequate digital infrastructure	4.11	0.78	77.8	4.11	0.60	88.9	Yes	1.000
Opportunity										
O1	O	Education Development Programme 2023–2027	4.11	0.78	77.8	4.22	0.44	100.0	Yes	0.715
O2	O	Erasmus+ and mobility expansion	3.89	0.78	66.7	4.22	0.67	88.9	Yes	0.345
O3	O	Regional HE hub potential	4.22	0.67	88.9	4.11	0.60	88.9	Yes	0.715
O4	O	Demand from post-Soviet neighbours	4.00	0.50	88.9	4.11	0.78	77.8	Yes	0.724
O5	O	Bologna quality reform incentives	4.33	0.50	100.0	4.33	0.50	100.0	Yes	1.000
O6	O	Digitalisation and e-learning investment	4.67	0.50	100.0	4.11	0.60	88.9	Yes	0.049*
O7	O	Rising youth demographic	3.89	0.33	88.9	4.22	0.44	100.0	Yes	0.089
Threat										
T1	T	Regional competition: Georgia and Turkey	3.78	0.97	66.7	3.89	0.93	77.8	Yes	0.807

Item	Dim.	Description	R1 M	R1 SD	R1 %	R2 M	R2 SD	R2 %	Consensus	p
T2	T	Brain drain of academic staff	3.78	0.67	66.7	4.33	0.71	88.9	Yes	0.106
T3	T	Oil-revenue fiscal dependency	3.44	0.88	44.4	4.00	0.50	88.9	Yes	0.120
T4	T	Limited global research visibility	3.89	0.78	66.7	3.89	0.78	66.7	No†	1.000
T5	T	South Caucasus geopolitical instability	4.22	0.97	66.7	3.89	0.78	66.7	No†	0.434
T6	T	Rapid accreditation standard changes	3.67	0.87	44.4	4.11	0.60	88.9	Yes	0.224
T7	T	Declining public trust in HE quality	3.78	0.83	55.6	3.89	0.78	66.7	No†	0.774

Note. R1 = Round 1; R2 = Round 2; M = mean agreement (1–5 Likert scale); % = percentage of panellists rating ≥ 4 . Consensus threshold: $\geq 67\%$ panel agreement in Round 2. p = Wilcoxon signed-rank test, Round 1 vs. Round 2. * p < .05; ** p < .01. † Item did not reach consensus threshold (66.7%); retained as contested finding.

Table 4. Strategic Benchmarking — Azerbaijan vs. Comparator Systems (n = 38 institutions; 6 countries)

Variable	AZ M	AZ SD	AZ 95% CI	Comp. M	Comp. SD	U	p	d	Gap	Sig.
Research Pubs (per 100 Faculty)	7.78	4.81	[3.6, 12.0]	23.18	10.84	17.5	.005	1.836	Below	Yes*
Governance Score (0–100)	66.18	8.37	[58.8, 73.5]	76.24	7.79	30.0	.021	1.244	Below	Yes*
Intl. Curriculum (%)	31.76	1.56	[30.4, 33.1]	50.02	14.24	7.0	.001	1.803	Below	Yes*
Staff PhD Ratio (%)	51.36	5.14	[46.9, 55.9]	68.48	10.81	9.0	.002	2.023	Below	Yes*
External Funding (%)	17.66	4.77	[13.5, 21.8]	31.71	10.20	20.0	.005	1.765	Below	Yes*
QA Maturity (1–5)	3.48	0.34	[3.2, 3.8]	3.99	0.47	31.5	.029	1.225	Below	Yes*
Intl. Student Ratio (%)	6.62	1.81	[5.0, 8.2]	15.00	5.97	13.0	.001	1.900	Below	Yes*

Note. AZ = Azerbaijan (n = 5); Comparators include Georgia (n = 6), Armenia (n = 5), Poland (n = 8), Czechia (n = 7), Turkey (n = 7). U = Mann–Whitney U statistic. d = Cohen's d effect size. d > 1.0 = large effect. 95% CI = confidence interval for Azerbaijan mean. * p < .05.

Table 5

Significant Longitudinal Performance Trends by Institution — OLS Regression (2019–2023; n = 25 institution-year observations; p < .05 only)

Inst.	Type	Variable	Slope/yr	R ²	p	CI Low	CI High
A	Comprehensive Research	Research Publications (per 100 Faculty)	1.213	0.789	.044	0.503	1.923
A		QA Maturity (1–5)	0.110	0.981	.001	0.093	0.127
A		Staff PhD Ratio (%)	0.910	0.858	.024	0.491	1.329
B	Teaching-Intensive	QA Maturity (1–5)	0.082	0.809	.038	0.037	0.127
B		External Funding (%)	0.810	0.805	.039	0.359	1.261
C	Technical/Engineering	Governance Score (0–100)	1.610	0.823	.034	0.764	2.456
C		QA Maturity (1–5)	0.107	0.958	.004	0.082	0.132
D	Specialist Professional	Governance Score (0–100)	1.780	0.839	.029	0.897	2.663
D		QA Maturity (1–5)	0.106	0.862	.023	0.058	0.154
E	Semi-Autonomous	Research Publications (per 100 Faculty)	1.238	0.971	.002	0.997	1.479
E		QA Maturity (1–5)	0.145	0.990	< .001	0.129	0.161
E		Staff PhD Ratio (%)	0.660	0.965	.003	0.519	0.801
E		Student–Faculty Ratio	–0.210	0.861	.023	–0.305	–0.115

Note. Only statistically significant trends (p < .05) are reported. Slope = unstandardised OLS regression coefficient (annual change per year). R² = coefficient of determination. CI = 95% confidence interval. Inst. = Institution (A–E, anonymised per double-blind review policy).

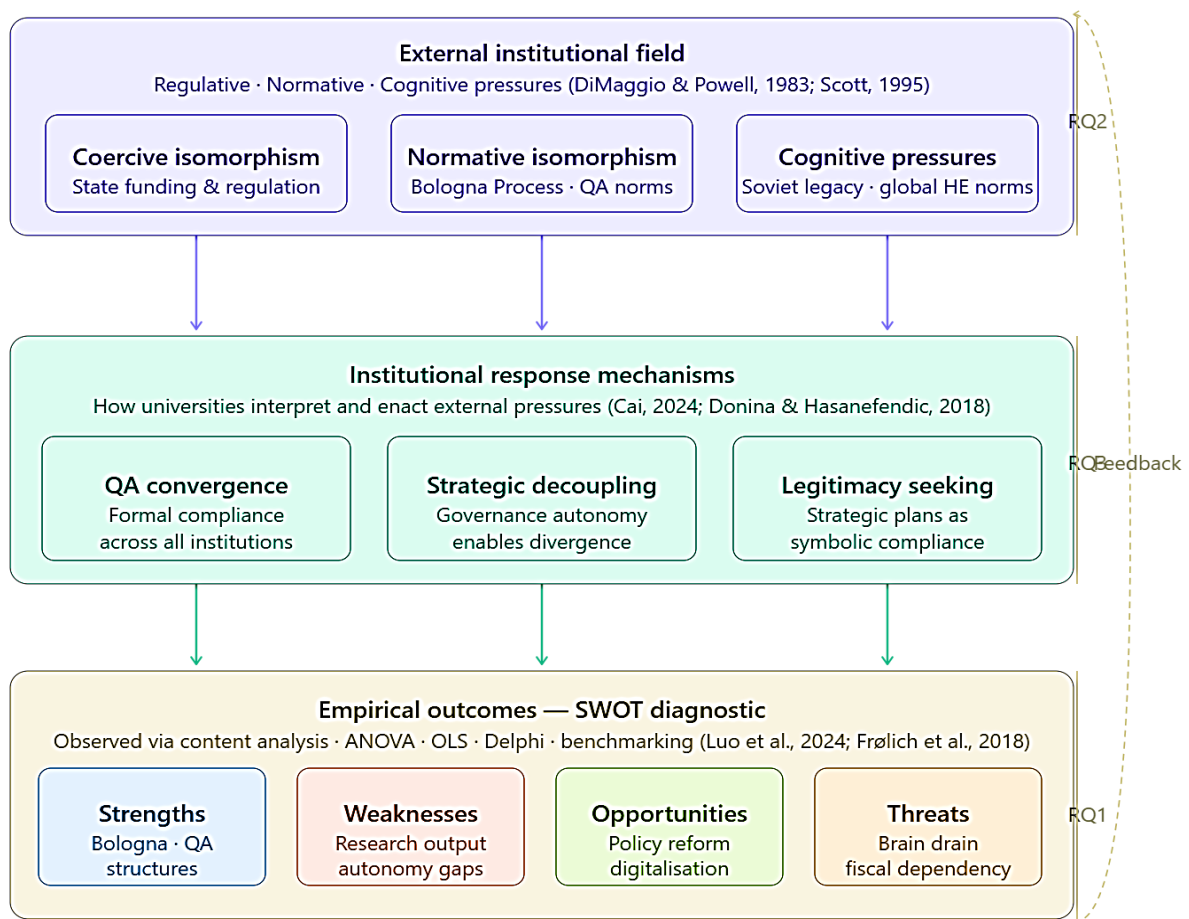


Figure 1. Institutional Theory Framework for Strategic Governance Analysis in Azerbaijani Higher Education.

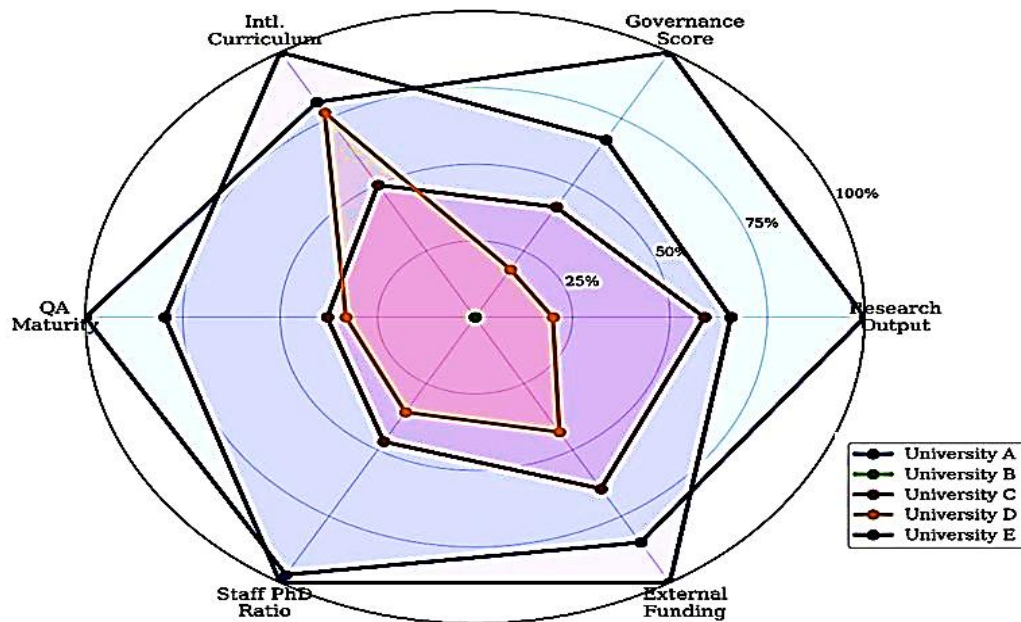


Figure 2: Normalised Institutional Governance Profiles by Strategic Dimension (2023; n = 75 department-level observations). Each polygon represents the normalised mean score of one institution across seven governance dimensions. University A = Comprehensive Research; University B = Teaching-Intensive; University C = Technical/Engineering; University D = Specialist Professional; University E = Semi-Autonomous.

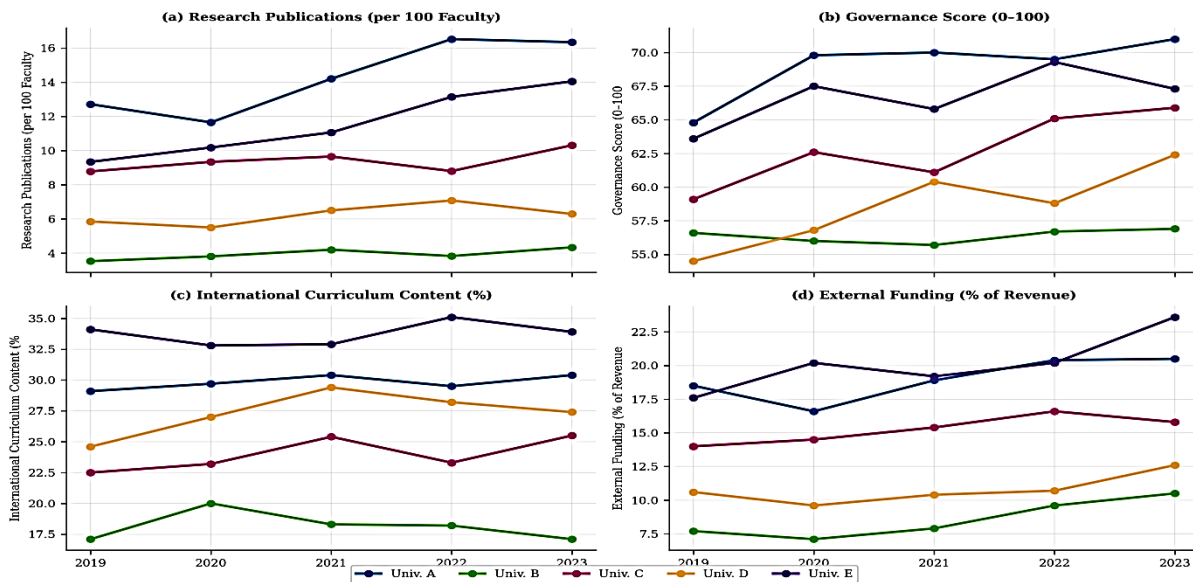


Figure 3: Longitudinal Trends in Key Performance Indicators (2019–2023) for Five Azerbaijani Universities. Panels display annual trajectories for (a) research publications per 100 faculty, (b) governance score (0–100), (c) international curriculum content (%), and (d) external funding (% of revenue).

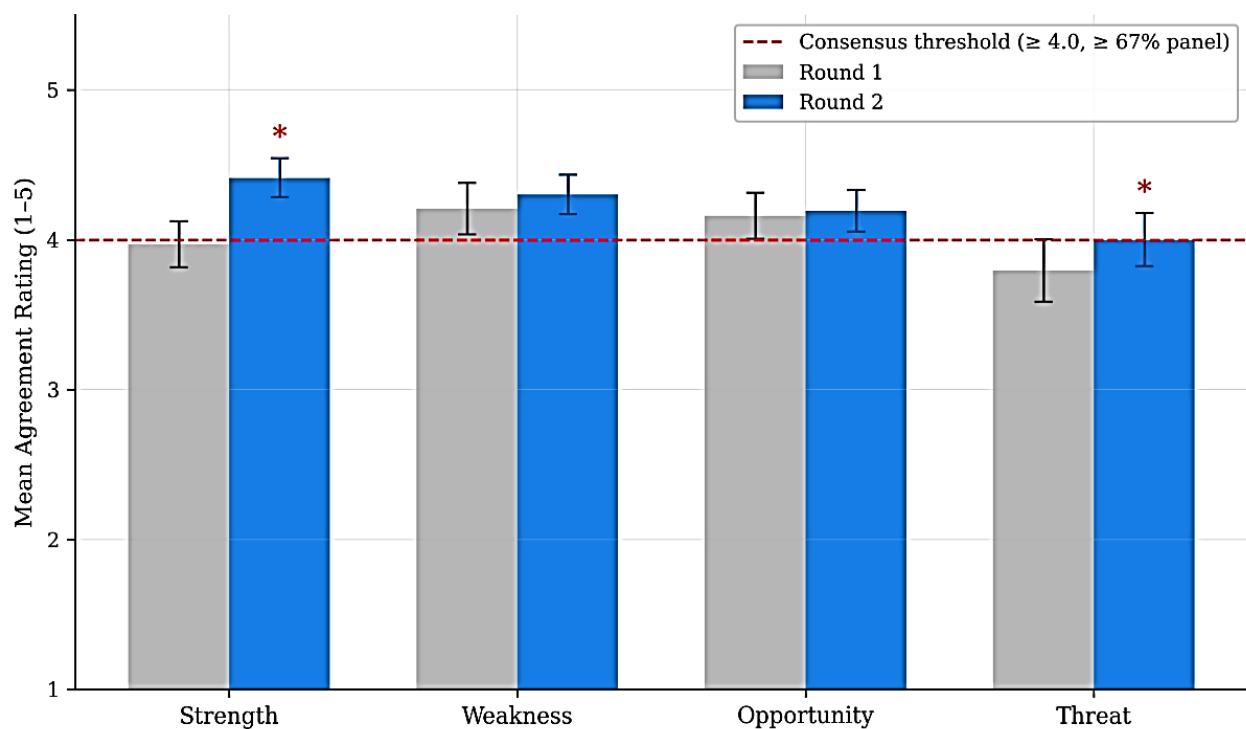


Figure 4: Delphi Expert Panel Mean Agreement Ratings by SWOT Dimension (n = 9 experts; Round 1 vs. Round 2). Error bars represent 95% confidence intervals. Dashed red line = consensus threshold (≥ 4.0; ≥ 67% panel agreement). * p < .05, Round 1 vs. Round 2 (Wilcoxon signed-rank test). Full item-level data reported in Table 3.

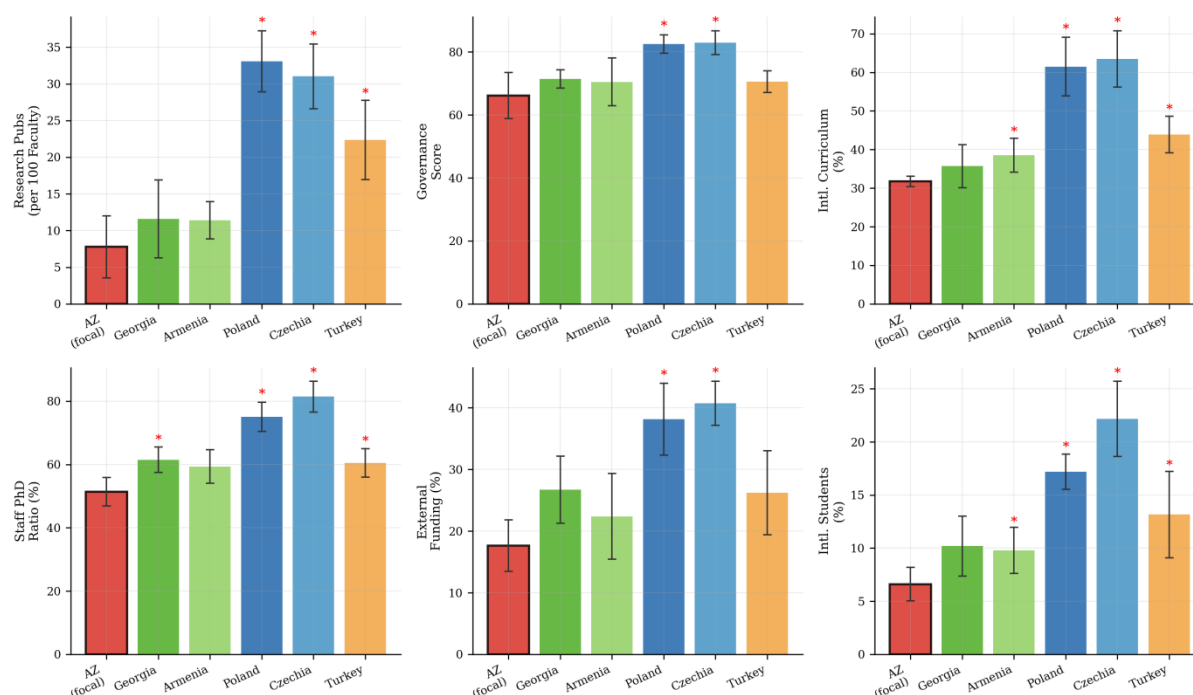


Figure 5: Strategic Benchmarking: Azerbaijan vs. Comparator Systems (n = 38 institutions; 6 countries). Bar charts display system-level means across six governance indicators. Error bars = 95% CI. Bold border = Azerbaijan (focal country). Red asterisk (*) = statistically significant difference vs. Azerbaijan (Mann–Whitney U, $p < .05$). Full statistics reported in Table 4.

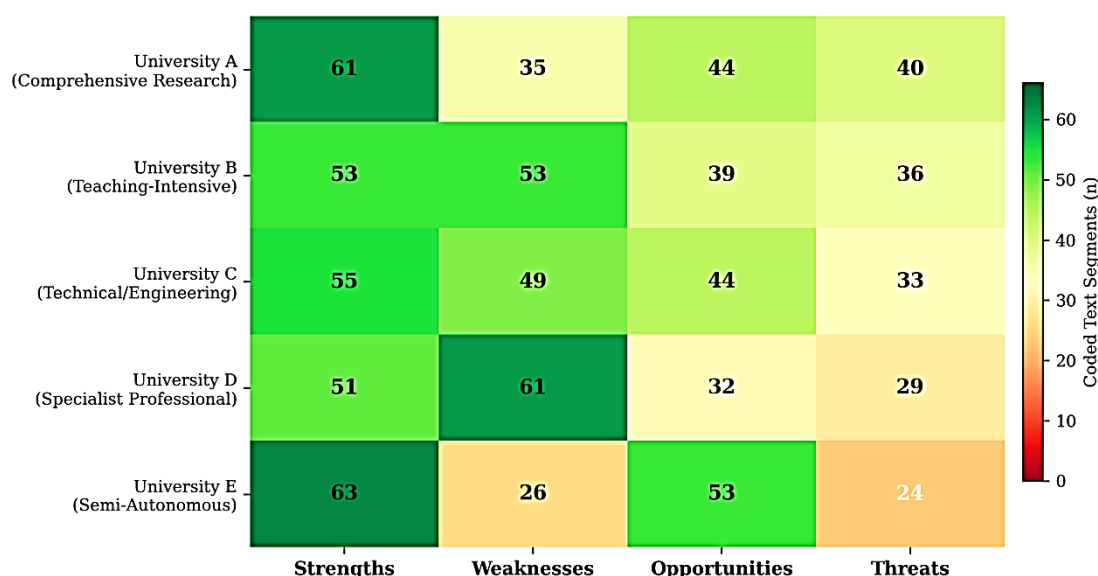


Figure 6: Content Analysis Coding Frequencies by Institution and SWOT Dimension (NVivo 14; 28 first-order codes; 7 second-order categories; n = 20 documents). Cell values represent total coded text segments per institution per SWOT quadrant. Colour intensity corresponds to frequency magnitude (green = high; yellow = moderate; red = low).

5. DISCUSSION

This study aimed to analyze the strategic conditions of governance and competitiveness of Azerbaijani universities based on the structured comparative SWOT analysis method, which was developed based on Institutional Theory. These results led to the development of three interrelated patterns that require further interpretation (Luo et al., 2024).

5.1. Differentiation of institutions within the same regulatory framework

The ANOVA results confirmed that a significant amount of variation existed across all eight governance indicators, with effect sizes in all cases being moderate to large ($\eta^2 = .349-.763$) (Al-Alagmeh et al., 2023). All five degree programmes are based on the same national policy framework, Bologna commitments, and quality assurance legislation, and yet this level of differentiation within the system is significant. Institutional Theory predicts that over time, organizations in similar normatively and normatively similar environments will converge in terms of isomorphism (Capano, 2022); the present results contradict this (Cai, 2024; Donina & Hasanefendic, 2018). University E, which is semi-autonomous, consistently has higher performance in terms of research output, internationalization, and external funding compared with its state-funded peers, providing evidence of the former's strategic capacity as a generative condition of governance autonomy, as argued by (Junfeng, 2024). University B, on the other hand, had the most "straightforward" profile on all dimensions, despite being a member of Bologna and being funded by the state. This finding is consistent with (Frølich et al., 2018; Wang & Shi, 2020), who concluded that intra-system variation within universities in Europe is not solely a reflection of system-level policy differences but also of the capacity of the organization to implement strategies.

5.2. The problem of the production gap and its structural correlates

The findings from the benchmarking showed that the rate of research publications of institutions in Azerbaijan in the South Caucasian and Eastern European countries was significantly lower than the rate of research publications of the institutions in these two regions. The greatest effect size was for the staff doctoral qualification gap ($d = 2.023$) (Battal, 2025). Pearson correlation analysis also confirmed that research output was most closely correlated with governance score ($r = .632$) and QA maturity ($r = .601$), indicating that the publication deficit is not a standalone phenomenon but is structurally connected to other governance and QA conditions (Kalgin et al., 2019; Pal & Sarkar, 2020). This is consistent with the results of (Pulford et al., 2020), who found that research capacity is dependent on cumulative organizational investment, not on specific interventions. The content analysis confirmed this trend; weakness coding level was the most common or tied for most common in four of five institutions in the Research_Output category, and was the sole category to achieve the cross-stakeholder consensus (100% W1; 100% Round 2) across the Delphi consensus of ten (Stacey et al., 2024; Toumi, 2026).

5.3. Divergent reform trajectories and the governance-autonomy nexus

The period-specific change in reforms, which was found to be meaningful in the OLS analysis, was statistically significant in the longitudinal analysis. Overall, system-level QA maturity rates increased considerably from 2019 to 2023, confirming that the investments made in system-level QA have led to measurable convergent gains regardless of institutional type—a pattern observed in other studies and part of the process of normative isomorphism evident within Bologna implementation mechanisms (Bischof, 2018; Tsiklashvili et al., 2023). The increase in research output was limited to Universities A and E; however, over the 5 years, there was no significant change in research or governance scores in the other universities. This division between QA convergence and research divergence suggests that formal adherence to quality standards does not necessarily spur research capacity development, meaning that a clear distinction should be drawn when assessing the impact of policies in transitional systems (Buckle et al., 2022; Rahul et al., 2025). In the contexts of Central and Eastern Europe, (Drach, 2020; Rini et al., 2025) found another version of a 'decoupling' phenomenon in which administrative reform was often followed by academic reform.

5.4. Expert validation and contested threat perceptions

The Delphi procedure reached a consensus on 25 of the 28 items, and only three threat items – geopolitical instability (T5), limited global research visibility (T4), and declining public trust (T7) – did not reach a consensus (Stein, 2022). Analytically, the fact that these items have been so contentiously debated across two rounds is itself informative, as it suggests that policy analysts, institutional administrators, and international researchers have genuine epistemic uncertainty about the level of threat that external factors pose and the extent to which they are politically tractable when compared to internal capacity variables, which are structurally more tractable for institutional-level governance responses (Artabe et al., 2023; Stein, 2022; Younas et al., 2026). The contested nature of T4 is especially significant in the context of benchmarking evidence that demonstrates the research visibility gap in Azerbaijan, which implies that experts' assessments of the seriousness of this threat might not yet be aligned with the level of the gap identified through quantitative data (Potapenko et al., 2024).

5.5. Limitations

This study was based on documentary evidence, which is only an officially stated, not enacted, strategy (Akiba et al., 2022). Future research using interviews with institutional leaders would provide a complementary view of the "gap" between the stated and enacted strategies. The sample of five institutions is not representative of the total diversity of the mission field in Azerbaijan, which has around 50 institutions; however, it was purposively selected to represent the diversity of missions. The cross-sectional

benchmarking design does not allow for causal inferences about observed gaps in performance with respect to specific governance mechanisms. Lastly, the document translation process, although professionally performed, has its own limitations in terms of interpretative loss in the sources in Azerbaijani and Russian (Cora et al., 2021).

Future directions

The use of the documentary approach adopted here would benefit from complementing longitudinal studies of governance reform implementation through interviews. A comparative analysis of other systems in the South Caucasus (specifically those in Georgia and Armenia) would allow for the analysis of patterns beyond the design of the present research, which was conducted in one country alone (Klyachkina, 2021; Zakaryan, 2025). The governance-autonomy performance differential found here could also be replicated after the series of legislative changes in the Azerbaijani higher education system that are currently underway, thereby offering a natural quasi-experimental test of the autonomy-performance relationship (Hajiyev, 2026).

6. CONCLUSION

This study aimed to examine the conditions of Strategic governance and pathways of institutional development in five universities in Azerbaijan using the SWOT analysis method based on institutional theory. Intra-system variation in governance performance was identified as a common theme from the content analysis, Delphi validation, benchmarking, and longitudinal regression, alongside system-wide research productivity gaps, staff capability gaps, and gaps in internationalization in comparison to regional peers. There was a positive correlation between semi-autonomous governance and better achievement on several indicators and between formal Bologna compliance and better achievement on quality assurance indicators, but not with increased research capacity. The results contribute to the field of institutional theory in the context of the South Caucasus, where such studies have been underrepresented in the mainstream of higher-education research and scholarship, provide empirical evidence for policymakers interested in governance reform, and have implications for other arenas of higher education. The boundaries to generalization established in this study are recognized in its document-based design and 5-institution sample. Further studies using interview techniques and extended comparative designs will enhance empirical support. The greater institutional autonomy of HEIs should be an urgent priority in Azerbaijan's ongoing agenda of higher education development.

7. DECLARATIONS

Ethical Considerations

This study was conducted in accordance with internationally recognized ethical standards for educational and social science research. The research relied primarily on institutional documents, publicly available reports, strategic plans, and expert evaluations. Participation in the Delphi validation process was voluntary, and informed consent was obtained from all experts involved. All responses were anonymized and reported in aggregate form to ensure confidentiality. The study adhered to the principles of research integrity, transparency, and responsible scholarly conduct.

Author Contributions

Rahimakhanim Rzabala Mammadzade: Conceptualization, literature review, theoretical framing, interpretation of findings, and manuscript preparation.

Konul Hidayat Jabbarova: Data collection, documentary analysis, validation of findings, and manuscript review.

Kamala Sahib Mustafayeva: Quality assurance analysis, institutional benchmarking, data verification, and editorial review.

Minara Ajdar Mammadova: Methodological support, qualitative analysis, interpretation of results, and critical revision of the manuscript.

Lala Zahir Allahverdiyeva: Theoretical consultation, educational policy analysis, academic supervision, and review of the final manuscript.

Ilhan Alyay: Research design, methodology, statistical analysis, SWOT framework development, data interpretation, visualization, and original draft writing.

All authors made substantial intellectual contributions to the study, participated in the development and revision of the manuscript, and approved the final version for publication.

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Conflict 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.

Data Availability Statement

The data supporting the findings of this study are derived from publicly available institutional reports, strategic planning documents, national policy documents, and international higher education databases cited throughout the article. Additional materials are available from the corresponding author upon reasonable request.

AI Statement

The authors declare that no artificial intelligence tools were used in the design of the study, data collection, data analysis, interpretation of findings, or preparation of the scientific content. AI-assisted tools were used solely for limited language editing and formatting purposes. All intellectual content, analysis, conclusions, and interpretations remain the sole responsibility of the authors.

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