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# The Governance–Academics Nexus: Mediation through Institutional Infrastructure — A Pathway to Quality Enhancement in Higher Education

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**ABSTRACT**

Persistent concerns regarding the quality of higher education in Pakistan have increasingly drawn attention to the role of institutional governance and the conditions through which it influences academic quality. Although governance is frequently assumed to enhance academic performance, its effect may depend on the adequacy of institutional infrastructure. The present study therefore examined the governance–academics nexus by investigating the mediating role of institutional infrastructure in promoting quality enhancement at the Institute of Education and Research (IER). Using a cross-sectional survey design, data were collected from 120 participants, including students, faculty members, and administrative staff. A structured questionnaire was used to measure perceptions of governance, institutional infrastructure, and academic quality. The proposed relationships were tested through structural equation modeling using IBM SPSS AMOS 24. The findings indicate that governance exerts a strong and significant influence on institutional infrastructure, whereas its direct effect on academic quality is weak and statistically insignificant. Institutional infrastructure, however, demonstrates a significant positive effect on academic quality and substantially mediates the relationship between governance and academic outcomes. The mediation model showed an acceptable fit with the data, suggesting that improvements in governance primarily contribute to academic quality through the development of adequate physical, technological, and learning resources. The study highlights the central importance of institutional infrastructure as the mechanism through which governance translates into quality enhancement in higher education. The findings imply that higher education institutions seeking to improve academic quality should complement governance reforms with sustained investment in infrastructure and learning facilities.

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## INTRODUCTION

Quality education is widely recognized as a key driver of the global knowledge economy. It not only builds human capital but also contributes to national development, with higher education institutions (HEIs) playing a multifaceted role in this process. Over the past three to four decades, there has been a growing scholarly interest in quality assurance as higher education systems undergo significant transformations in policy making, resource allocation, budgeting, infrastructure development, academic enrichment, and decision-making processes. The ability of HEIs to deliver quality education depends largely on the effective alignment of governance structures with academic functions, supported by institutional infrastructure that fosters teaching, learning, and research. While numerous studies have explored these constructs individually and in relation to each other, limited research has examined the mediating role of institutional infrastructure in the governance–academics nexus. Addressing this gap, the present study investigates how governance influences academic functions in HEIs, with infrastructure acting as a mediating factor that enhances the quality of education.

Globally, international quality assurance bodies and frameworks such as UNESCO's Education 2030 Agenda, the National Assessment and Accreditation Council (NAAC) in India, and Pakistan's Higher Education Commission (HEC) and National Accreditation Council for Teacher Education (NACTE) have emphasized the need for HEIs to move beyond narrow academic reforms. Instead, they advocate for comprehensive approaches that integrate evidence-based governance, curriculum innovation, digital transformation, and inclusive learning environments (UNESCO, 2022; NAAC & COL, 2007). However, developing countries face significant challenges in realizing these expectations. Empirical studies from South Asia (Ahmed, 2012; Sahito & Väisänen, 2017; Parveen & Adil, 2023) consistently report gaps between policy commitments and institutional capacities, particularly in public-sector universities that struggle

with funding constraints, bureaucratic rigidities, and outdated management practices. Developing countries are highlighting the urgency of addressing these gaps. Global comparative studies (Altbach & de Wit, 2020; Marginson, 2021) states that without transparent governance and vigorous infrastructure, academic reforms alone cannot ensure quality education. Similarly, Khan and Ali (2021) found a gap between students' expectations and academic services in Pakistani universities, while Raza et al. (2023) highlighted how governance inefficiencies and infrastructural inadequacies directly challenge student satisfaction and graduate employability. These insights show that these constructs should research as integrated system in higher education rather than as fragmented aspects.

Although, quality enhancement in higher education is prioritize topic of study, still there is need to explore this tripartite relationship holistically—particularly within the Pakistani context. Most studies examine governance effectiveness, academic quality, or infrastructure adequacy as separate variables, leaving underexplored the role of infrastructure in mediating the governance–academics nexus. In response to the limited attention given, the present study positions institutional infrastructure as a mediating pathway linking governance reforms to academic quality enhancement. By focusing on this mediation process, the study seeks to contribute to theoretical debates on higher education quality, while offering practical insights for policymakers, institutional leaders, and quality assurance agencies determined to strengthen higher education in developing contexts.

## LITERATURE REVIEW

### Academic Dimension in Higher Education

The institutional performance lies in academics which represent the intellectual and pedagogical fundamentals. It involves instructional innovation, faculty credentials, curriculum relevance and assessment practices that collectively shape learning outcomes and institutional reputation. Darling-Hammond (2006) recommends that, in the 21st century, there should be learner-centered curricula, technological adaptability, and research integration in academics. Yet, in Pakistan, the academic processes of many higher education institutions (HEIs) remain largely conventional and theory-oriented, with limited incorporation of critical thinking, research culture, or digital pedagogy (Parveen & Adil, 2023). Many higher education institutions (HEIs) in Pakistan are endeavoring to align theory and practice following the periodic curricula reforms. Despite that assessment practices prioritize rote learning over reflective or research-based competencies, irregular faculty development initiatives, and decentralized learning attitudes are partially observed. Consequently, academic structures in HEIs often lack the agility needed to respond to evolving global standards or local educational needs.

### Infrastructural Dimension in Higher Education

Institutional infrastructure—both physical and digital—functions as the mediating mechanism that translates governance strategies into academic productivity. According to UNESCO (2015), an enriched learning infrastructure must include modern laboratories, adequate facilities, and reliable access to information and communication technologies. Khan and Shah (2019) reported that in Pakistan infrastructure deficits of obsolete libraries, overcrowded classrooms, and digital connectivity. Some metropolitan institutions have introduced computer labs, digital libraries, and multimedia classrooms but mostly hinder by poor maintenance and uneven distribution. In other perspective the institutional implementation remains inconsistent despite the underlined link between infrastructural modernization and academic innovation highlighted by Higher Education Commission (HEC). It results in constraining students' experience to emerging pedagogical skills, limiting faculty performance and research productivity. Thereby, weak infrastructural base fade the academic gains that governance reforms might otherwise yield.

Quality education highlights infrastructure as an indicator with a reciprocal relationship to academics and governance. As Rehman (2024) indicate governance reforms with infrastructural deficiencies cannot ensure quality improvement. Correspondingly, Riaz et al. (2024) also stress that governance objectives related to autonomy and accountability can apprehended with sufficient investment in physical, technological, and administrative infrastructure. The intervention is also supported by Amaral, Jones, and Karseth (2002), who argue that governance reforms are only effective if supported by commensurate organizational and infrastructural adaptations. UNESCO's Global Education Monitoring Report (2022) further asserts that infrastructure forms the backbone of sustainable higher education systems, particularly in resource-constrained and post-conflict contexts.

### Governance Dimension in Higher Education

Governance is prescribed as a strategic framework of institutional effectiveness that involves decision-making processes, leadership styles, arrangements, autonomy, and accountability systems that ensure coherence among various institutional functions (Usman, 2014). On a global scale, governance principles emphasize inclusivity, transparency, accountability, and freedom as essential to achieving higher-quality educational outcomes (Atanaw, Gebreselassie, & Kidane, 2025; Shattock, 2024). Emergent governance advocates an inclusive framework model incorporating academic staff, students, administrators, and external regulators to co-construct an environment that reflects collective interests and transparency (Stensaker & Harvey, 2010). This approach promotes accountability and aligns governance with both academic values and infrastructural dimensions (Hénard, 2010). Effective

governance according to Bush (2008) is participatory and developmental. Similarly, Khan (2024) demonstrated that participative governance positively influences academic leadership, organizational commitment, and institutional sustainability. Leisyte's (2007) comparative research also support transition from command government to decentralized governance. To maintain academic standards while navigating external pressure, the involvement of diverse stakeholders in governance is significant (Stensaker and Harvey, 2010). Hallinger and Heck (2010) define it as a model that translate management efficiency into pedagogical advancement known as leadership for learning. These findings reinforce the importance of a balanced governance approach in nurturing an academic climate conducive to innovation and quality (Muftahu, 2023).

In Pakistan, governance structures in HEIs are mostly centralized leading to fragmented policy execution and limited stakeholder participation (Rehmani, 2016). As a catalyst of reform HEC is instituting autonomy and accountability in institutions to embed governance within regulatory frameworks (Riaz, Jabeen, & Irfan, 2024). The discrepancies between public and private university governance are observed, with public universities bearing more external influence, thereby impeding quality assurance efforts (Usman, 2014). In order to ensure quality education Quality Enhancement Cells (QECs) established under HEC, have introduced accountability practices but they often operate procedurally rather than developmentally. Bureaucratic rigidity results in minimal stakeholder involvement in decision-making and resource planning, as well as in reduced institutional capacity to foster continuous improvement.

Governance impact is multilevel, as macro-level reforms influence academic units, with infrastructure either enabling or constraining these effects (Leisyte, 2007). An African research by Anayochukwu and Chukwuemeka (2023) found that governance reforms, along with infrastructural reforms, are critical to improving institutional quality. In the wake of growing social demands governance and infrastructure must underpin institutional expansion and diversification (Muftahu, 2023). Transparency International (2023) highlights the role of effective governance and robust infrastructure in minimizing corruption risks and ensuring equitable resource allocation, thus safeguarding quality in competitive higher education markets.

**Method and Procedures**

A cross-sectional survey design was employed to examine the extent to which institutional infrastructure mediates the relationship between governance and academic quality in higher education. The study was conducted at the Institute of Education and Research (IER) and focused on the three core constructs underlying the proposed model: governance, infrastructure, and academic quality.

**Participants and Procedure**

The target population comprised students, faculty members, and administrative staff at IER. To ensure representation across academic programs, stratified random sampling was used for students. The student population was divided into seven academic sub-departments, and 15 students were randomly selected from each stratum, yielding a sample of 105 students. In addition, 10 faculty members and 5 administrative staff members were recruited through convenience sampling because of the relatively small size of these groups. The final sample therefore consisted of 120 participants. Following institutional approval, participants were informed of the study's purpose and assured of the confidentiality and voluntary nature of their participation. Questionnaires were distributed in person and collected after completion.

**Instrument**

Data were collected using a researcher-developed questionnaire consisting of four sections: demographic information, academic quality, institutional infrastructure, and governance. The academic, infrastructure, and governance dimensions each comprised 6 items rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The academic quality section assessed curriculum relevance, teaching effectiveness, assessment practices, and research opportunities. The infrastructure section focused on the adequacy of classrooms, library resources, technological facilities, internet access, and learning support services. The governance section measured transparency, responsiveness, participation in decision-making, and the effectiveness of administrative procedures. Content validity was established through expert review by specialists in educational administration and research methodology. A pilot study was subsequently conducted to refine item wording and improve clarity. Internal consistency for all scales was satisfactory, with Cronbach's alpha coefficients exceeding the recommended threshold of .70.

**Data Analysis**

To examine the mediation model of Governance in relation to Infrastructure and Academic outcomes, both direct and indirect effects were analyzed. Mediation estimates were obtained using IBM SPSS AMOS (Version 24.0). Effect sizes were interpreted using standardized coefficients (β), categorized as small (β = .20), moderate (β = .50), and large (β = .80), following common benchmarks for social science research. Statistical significance was set at $p < .05$. Model fit was assessed using several indices, including the chi-square statistic ($\chi^2$), chi-square to degrees of freedom ratio ($\chi^2/df$), root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR),

comparative fit index (CFI), and Tucker–Lewis index (TLI). These indices allowed for a comprehensive evaluation of the structural model's adequacy.

**Findings**

Figure 1 and table 1 presents the key fit indices used to evaluate the structural equation model examining the mediating role of Infrastructure in the relationship between Governance and Academic outcomes. The chi-square statistic ($\chi^2$ = 252.597, df = 132, p < .001) was statistically significant. While a significant chi-square often suggests a discrepancy between the observed and model-implied covariance matrices, this result is common in larger samples and does not necessarily indicate poor model fit. To address this, the chi-square to degrees of freedom ratio ($\chi^2$/df = 1.914) was calculated, which fell below the recommended threshold of 2.00. This suggests that the model demonstrates an acceptable level of fit relative to its complexity. The Root Mean Square Error of Approximation (RMSEA = .093, 90% CI [.075, .110]) indicates a moderate fit, with the confidence interval showing that the approximation error is within an acceptable range. RMSEA values below .08 are often considered indicative of reasonable fit, so the model is slightly above this stricter cutoff but still acceptable in practice. Other incremental fit indices support this assessment. The Comparative Fit Index (CFI = .836) and Tucker–Lewis Index (TLI = .787), though slightly below the conventional cutoff of .90, indicate that the model represents a substantial improvement over the independence model, capturing key relationships among variables. The standardized root mean square residual (SRMR = .050) was within the acceptable limit of .08, suggesting that the residual discrepancies between observed and predicted correlations are small. Overall, these indices collectively suggest that the proposed mediation model provides a reasonable representation of the observed data. While some indices are slightly below ideal thresholds, the model adequately captures the key relationships among Governance, Infrastructure, and Academic outcomes, supporting further interpretation of the mediation paths.

Table 2 presents the individual regression analyses for both direct and indirect predictors of academic outcomes in relation to Governance and Infrastructure. The initial two conditions for conducting mediation analysis require that the independent variable (Governance) be related to both the dependent variable (Academic) and the mediator (Infrastructure). Satisfying this requirement, the indirect effect of Governance on Academic through Infrastructure was estimated at .318 (β = .318; p < .001), accounting for a substantial portion of the total effect and indicating significant mediation. This suggests that Infrastructure meaningfully mediates the relationship between Governance and Academic performance. Examining the individual paths of the mediation model provides further insight. For the components of the indirect effect, the relationship between Governance and Infrastructure was strong and statistically significant (β = .730; p < .001), indicating that higher levels of Governance are associated with better Infrastructure within the institution. In contrast, the relationship between Infrastructure and Academic performance was moderate and positive (β = .469; p = .025), suggesting that better Infrastructure is associated with higher Academic outcomes. The total effect of Governance on Academic outcomes showed an estimate of .410 (β = .410; p < .001), indicating a significant association. The direct effect of Governance on Academic performance was very small and non-significant (β = .068; p = .708), accounting for only a minimal proportion of the total effect and confirming that the relationship is primarily indirect through Infrastructure. These findings suggest that while Governance alone does not directly impact Academic outcomes, its influence is effectively realized through improvements in Infrastructure. This supports a partial mediation model, highlighting that Governance contributes to Academic performance primarily by shaping the institutional Infrastructure, which in turn facilitates better academic engagement and outcomes (see Table 2).

Table 1: Fit Indices and Acceptable Value for SEM examining governance, infrastructure, and academic quality

| Index | Normal Value | Acceptable Value | Calculated Value |
|---|---|---|---|
| $\chi^2$ p-value | > .05 | — | .000 |
| $\chi^2$/df | < 2 | < 3 | 1.914 |
| RMSEA | < .05 | < .08 | .093 |
| 95% CI RMSEA | — | ≤ .10 | [.075, .110] |
| SRMR | < .05 | < .08 | .05 |
| CFI | > .95 | > .90 | .836 |
| NNFI (TLI) | > .95 | > .90 | .787 |

Note. $\chi^2$ = chi-square; df = degrees of freedom; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual; CFI = comparative fit index; TLI = Tucker–Lewis index; NNFI = non-normed fit index.

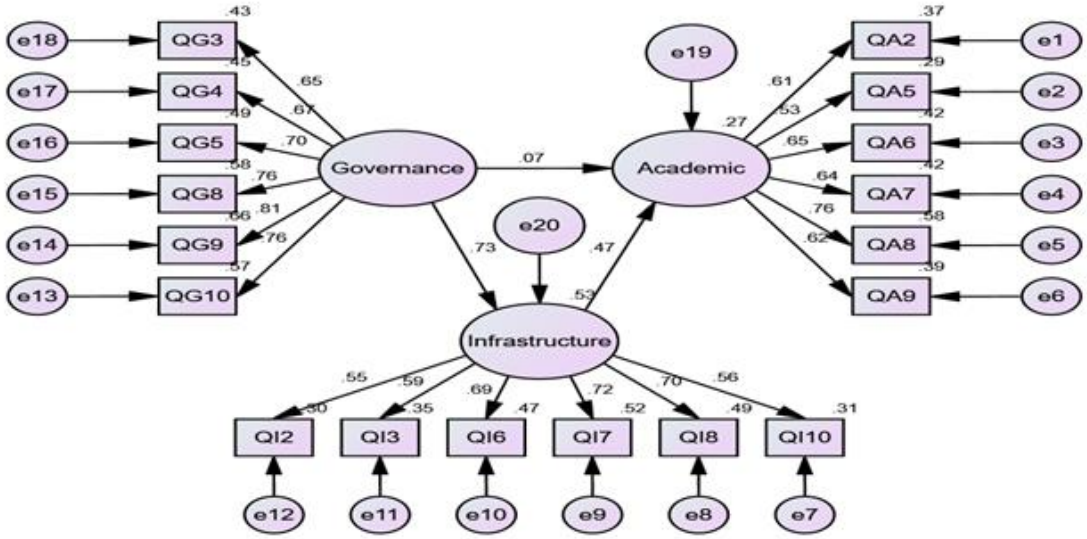


Figure 1: Mediation Model of Infrastructure between Governance and Academic Quality

*Note.* E = engagement; I = infrastructure; A = academic.

Table 2: Regression Results for the Mediation Model

| Path | Estimate | SE | 95% CI [LL, UL] | β | z | p |
|---|---|---|---|---|---|---|
| Indirect (G ⇒ I ⇒ A) | .263 | .053 | [.0165, .379] | .318 | 4.96 | < .001 |
| G ⇒ I | .596 | .128 | [.345, .827] | .730 | 4.65 | < .001 |
| I ⇒ A | .445 | .199 | [.056, .812] | .469 | 2.24 | .025 |
| Direct (G ⇒ A) | .053 | .140 | [–.222, .328] | .068 | .38 | .708 |
| Total (G ⇒ A) | .285 | .152 | [.048, .589] | .410 | 1.88 | .060 |

*Note*. G = governance; I = infrastructure; A = academic; SE = standard error; CI = confidence interval.

**DISCUSSIONS AND CONCLUSIONS**

In previous studies, major support was found for this phenomenon. Amaral et al. (2013) and de Boer et al. (2017) explained that infrastructural support is necessary for implementation of governance reforms and sustainable academic advancement. Nguyen et al. (2020) further confirm that an institution only translates leadership decisions into academic excellence when they have access to material capacities. Al-Kumaim et al. (2021) found that governance policies in Malaysian universities shape faculty development, research innovation, and teaching efficacy through the channel of infrastructure. In Pakistan, similar patterns emerge, albeit in a more resource-constrained environment. Ahmed and Baloch (2021) revealed that in public-sector universities, the effectiveness of Quality Enhancement Cells (QECs) depends primarily on the adequacy of institutional infrastructure and training mechanisms. They significantly enhance performance and assessment practices when equipped with technological tools and managerial support. Likewise, Shah and Ullah (2022) found that infrastructural adequacy strengthens the impact of governance-led teaching reforms, while Yousaf and Hussain (2023) showed that leadership and infrastructural resources jointly facilitate collaborative academic practices through professional learning communities in Lahore's HEIs.

The mediating role of infrastructure in this nexus also explains why some higher education institutions achieve greater academic effectiveness under similar governance frameworks. Salmi (2017) observes that the key to excellence for institutions lies in a triadic system of governance, infrastructure, and academic cohesion, in which physical and digital infrastructure sustains research capacity, pedagogical innovation, and institutional autonomy. This observation resonates with findings from developing nations such as Vietnam and Indonesia, where infrastructural deficits undermine governance reforms and faculty development programs (Nguyen et al., 2020; Pham & Tuan, 2021). Within this theoretical frame, institutional infrastructure can be understood as both a physical

and organizational mediator that channels governance intentions into academic behaviors. The results from Pakistan support this argument, illustrating that governance contributes to academic excellence not directly, but indirectly through infrastructural facilitation—ranging from digital systems and research spaces to professional support structures.

The findings of this study demonstrate that governance alone is insufficient to ensure academic quality in higher education institutions. Rather, the effectiveness of governance depends largely on its ability to create and sustain an adequate institutional infrastructure. While governance showed only a limited direct contribution to academic outcomes, its influence became substantial when mediated through infrastructural resources such as classrooms, libraries, technology, and learning facilities. The study therefore confirms that institutional infrastructure serves as the critical pathway linking governance to academic improvement. These results underscore the need for higher education institutions, particularly in Pakistan, to move beyond administrative reforms and prioritize infrastructural development as an essential component of quality enhancement strategies.

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