

Performance Evaluation Frameworks for Moroccan Public Universities: A Systematic and Bibliometric Review Emphasising Contextualisation

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Disclosure Statement:	The authors declare that they have not received any financial support that could have influenced the objectivity of this study. They take full responsibility for any potential plagiarism, the use of artificial intelligence in the writing process, as well as for the results presented in this article.
Conflict of Interest:	The authors report no conflicts of interest.
Cite this article:	BOUHESS, A., & FIKRI, M. (2026). Performance Evaluation Frameworks for Moroccan Public Universities: A Systematic and Bibliometric Review Emphasising Contextualisation. <i>International Journal of Accounting, Finance, Auditing, Management and Economics</i> , 7(11), 685–737. https://doi.org/10.5281/zenodo.22899461
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International Journal of Accounting, Finance, Auditing, Management and Economics - IJAFAME

ISSN: 2658-8455

Volume 7, Issue 11 (2026)

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Abstract

This systematic review delineates existing research on performance evaluation within public universities, with a specific focus on Morocco and analogous higher education systems. However, current scholarship exhibits a critical gap: the absence of a contextualized indicator framework that simultaneously articulates international evaluation standards, Moroccan sociolinguistic specificities, and sustainable development imperatives aligned with the PACTE ESRI 2030 reform. By synthesizing global theoretical models and empirical case evidence, this study addresses this lacuna and establishes an integrated performance evaluation framework tailored to Moroccan public universities.

Adhering to PRISMA 2020 guidelines, this study systematically surveyed scientific literature and policy reports published in English and French between 1992 and 2025 across five major databases: World Bank, UNESCO, Scopus, Web of Science, and ERIC. Following deduplication, 1,242 records were screened, from which 312 studies were subjected to full-text eligibility review, resulting in the final inclusion of 94 studies. Data extraction was conducted independently by two reviewers, supplemented by a bibliometric mapping of research trends and a formal quality appraisal using the Mixed Methods Appraisal Tool (MMAT).

The synthesis demonstrates that university performance is a multidimensional construct structured around eight core domains: research and innovation, teaching and learning, financial sustainability, governance, community engagement, internationalisation, equity, and digitalization. In Morocco, the higher education sector faces significant structural, budgetary, and linguistic challenges that complicate evaluation. Outdated curricula, persistent skills mismatches, and resource constraints limit evaluation effectiveness. Consequently, this study defines a contextualized indicator architecture directly aligned with the strategic priorities of national governance and regional socio-economic development.

This research provides actionable recommendations for policymakers and university leaders. It establishes the necessity of national evaluation frameworks that balance public accountability with institutional autonomy. The findings advocate investing in data infrastructure, capacity building, and organizational learning models to align academic missions with sustainable development goals.

Keywords: Higher education, performance evaluation, governance, contextualised indicators, digital transformation, PACTE ESRI 2030, Morocco

Classification JEL : I23; I28; H52; H83; O55.

Paper type: quantitative research

1 Introduction

The measurement of performance in universities has become a major concern of governments and institutional leaders in many countries across the world. Over the past few decades, there has been a dramatic increase in higher education enrollments, leading policymakers to worry about quality, value for money and social impact. This expansion has increased demands for public transparency as universities are required to demonstrate quality in teaching, research and engagement with the community and put pressure on state budgets. The present review is set within these global dynamics and focuses on the performance appraisal of the Moroccan public universities within the « PACTE ESRI 2030 ». The Ministry's official reform agenda is to modernize university governance, improve graduate employability and increase scientific excellence (MESRSI, 2022/2023). Generic evaluation frameworks, however, often fail to incorporate holistic metrics related to the Sustainable Development Goals (SDGs), regional socio-economic impact and linguistic complexity. A review of the history of higher education and its direct consequences for evaluation is necessary to understand the reasons for the existence of performance measurement in Morocco. The country attained its independence in 1956, and the new system was a blend of the traditional Koranic institutions and the French colonial structures (Akkari, A. 2026)). During the early post-independence period reforms were largely aimed at expanding access and standardizing the divergent educational tracks. However, the enduring legacy of the colonial model maintained French as the primary language of instruction in scientific and technical disciplines, while humanities underwent Arabisation, and recent policies promote English for research dissemination (Boutieri, C. 2011). Consequently, post-secondary education operates within a complex multilingual environment where standardized indicators risk misevaluating instructional effectiveness. Moreover, the quick growth of the sector, to a massified public system, has increased issues of employability of graduates and constraints of resources (Slimani & Abakouy, 2023; Mok & Neubauer, 2016). Therefore, performance evaluation in Morocco must be designed as a contextualized strategic lever aligning institutional autonomy with public accountability.

The concept of university performance is inherently multi-dimensional. Historically, universities were seen mainly as places for the production of knowledge and critical reflection within the academic mission, where the original ideals of higher education were to teach universal knowledge (Boulton & Lucas, 2011). Current academic mission models place a high value on research excellence, publication impact and graduate education, which have a strong influence on the world ranking systems. However, these frameworks define university efficacy in a broader range, including research productivity, resource allocation, internationalization, outreach, and core academic activities (Hernandez-Diaz et al., 2020). Rankings have also been criticized for their mixture of academic goals and market competition, ignoring governance, digital visibility and local importance. Performance assessment has consequently broadened to include fiscal management, internal procedures, and community involvement. The early criticism of performance indicators by the World Bank shows that indicators are controversial and ambiguous and there is a need to balance the necessary accountability and institutional autonomy (Noordegraaf, 2017). Community engagement is context-dependent. In the non-academic world social impact assessment is increasingly qualitative and participatory (Cole et al., 2024).

Performance indicators are often generic and do not reflect the realities of operating in middle income higher education systems.” In Morocco, contextualized indicators are needed due to the combination of multilingualism, regional socio-economic inequalities and evolving regulatory requirements. Socio-economic factors heavily complicate evaluation, as public universities attract students with differing backgrounds while funding and infrastructure remain unequally distributed (Slimani & Abakouy, 2023). Such funding pressures are rarely reflected within

performance indicators formulated for resource-rich international systems (Slimani & Abakouy, 2023) . In turn, Moroccan scholars and policymakers advocate for contextualised indicators that reflect employability outcomes, curriculum relevance, and industry partnerships, while addressing national priorities such as access, equity, language policy, regional development, and innovation (Chauffour, 2018) . Contextualized indicators have to link international evaluation traditions to national quality assurance standards developed by the Agence Nationale d’Evaluation et d’Assurance Qualité (ANEAQ).

This systematic review synthesizes peer-reviewed academic literature and official policy documents on the evaluation of university performance, with a focus on the case of Moroccan public universities and similar systems. It makes a three-fold contribution:

Mapping It systematically identifies the theoretical models, dimensions of performance and specific indicators used in global and regional higher education scholarship.

Methodological Appraisal: It evaluates the measurement methodologies (including Data Envelopment Analysis and Balanced Scorecards) and operational limitations reported in the literature.

Synthesis of contextual framework These findings are articulated with the socio-cultural, linguistic and regulatory landscape of Morocco, proposing an integrated indicator framework aligned with ANEAQ standards and PACTE ESRI 2030 strategic priorities.

The literature on higher education management is growing, yet there is a fundamental research gap in the existing scholarship. This gap is the absence of an integrated, contextualized performance evaluation framework that simultaneously articulates global evaluation standards, Moroccan sociolinguistic specificities and national sustainable development priorities.

To address this gap, this review is guided by the following overarching central research question:

Central Research Question: How can global university performance evaluation frameworks be contextualized to establish a valid, robust, and operationally viable indicator architecture tailored to the sociolinguistic, structural, and regulatory realities of Moroccan public universities?

To answer this central question, the inquiry is operationalized through five sub-questions corresponding directly to the analytical structure of this review:

- Theoretical Traditions: What conceptual traditions underpin university performance evaluation, and how do managerialist, public-value, and academic-mission paradigms shape indicator selection?
- Performance Dimensions: What are the major performance dimensions identified in the literature across teaching, research, governance, finance, equity, digitalization, internationalization and community engagement?
- Methodological Approaches & Challenges: What quantitative and qualitative measurement methods (e.g., DEA, BSC, dashboards) are employed, and what validity, data availability, and gaming challenges do they present?
- International Performance Indicators in the Setting of Sociolinguistic Diversity, Socioeconomic Inequalities and Regulatory Structures in Morocco: How do these contextual factors influence the validity and applicability?
- Synthesis of the framework: What contextualized indicator architecture and future research agenda emerge from the synthesis to guide the Moroccan policy makers and the university leaders?

This review has been carried out systematically according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA 2020) guidelines. It comprises peer-reviewed journal articles, books and official policy reports published in English or French from 1992 to 2025, and drawn from five major databases: Scopus, Web of Science, World Bank, UNESCO and ERIC. Studies were included on public universities worldwide, and on Morocco,

North Africa and middle-income developing countries, and covered eight main performance domains: teaching and learning, research and innovation, community engagement, governance, financial sustainability, equity, digitalization, and internationalization.

2 Conceptual and Analytical Framework

2.1 Performance evaluation traditions in higher education

Academics and practitioners seem to use different paradigms to evaluate the performance of universities (Guarini et al., 2020). The managerialist tradition, grounded in the principles of New Public Management, arguably prioritizes efficiency, accountability, and competition. Universities are considered service organisations, and they must demonstrate their value to stakeholders while competing for resources. Balanced scorecard strategies depict this orientation by the translation of mission and strategy into quantifiable performance measures on financial, internal, learning and stakeholder models. Managerialist models often prioritize metrics such as graduation rates, research outputs, income generation and cost efficiency. In contrast, contemporary discourse concerning university governance in Morocco appears to increasingly incorporate qualitative regulatory imperatives as advanced by the National Agency for Evaluation and Quality Assurance.

The public-value perspective may offer an alternative conceptualization of the role of universities as public goods and civic institutions, elucidating that these entities possess functions extending beyond mere market efficiency. The World Bank has provided a critical analysis of the performance indicators and has stated that institutions of higher learning should weigh the balance between accountability and autonomy and identify the boundaries of proxy measures (Kells, 1992). The frameworks of public value appear to emphasize contributions to social equity, cultural preservation, democratic participation, and regional development. These frameworks warn of the risks of the exclusive use of quantitative parameters that can be a vehicle for the distortion of organizational objectives or mission drift. This view is consistent with the theories of community engagement that present universities as partners in meeting society's needs. The community engagement project of TEFCE proposes that community engagement cannot be narrowed down to mere measurements, and that organisational evaluation must be conducted in a participatory, context-sensitive (Arazy et al., 2026).

The academic tradition of the mission highlights the intrinsic value of knowledge creation and dissemination. It regards universities primarily as places of learning and research, influenced by the Humboldtian ideals. Morocco's higher-education reformers point out that early universities were conceived as places for 'teaching universal knowledge', focusing on liberal education and critical inquiry (Boulton & Lucas, 2011). Many modern academic-mission frameworks may highlight research excellence, maximization of publication impact and training high-calibre graduates. These views form the basis of international ranking systems with a heavy focus on research outputs and citations. However, rankings have been criticized for the conflation of the academic mission with market competition, and for an apparent oversight regarding governance and digital presence. The assessment of university performance exists at the convergence of multiple theoretical frameworks (academic mission, managerialism, and public value) that influence the choice of indicators. To address the conceptual disunity evident in global literature, universities may be envisioned as a system composed of two interrelated subsystems: the academic subsystem and the administrative subsystem. The academic subsystem consists of the institution's core mission functions, knowledge production, education provision and community engagement. The administrative subsystem, in contrast, is a support system of the operational and organizational system and consists of financial and physical resource management, human resource management, governance, internationalization and quality assurance (Hernandez-Diaz et al., 2021). In

Moroccan public universities, this inherent duality elucidates the operational significance of the eight identified performance areas: administrative and logistical aspects (including financial sustainability and digital transformation) serve not as ultimate objectives, but as the crucial efficiency groundwork necessary to fulfill the academic and societal aspirations outlined by the PACTE ESRI 2030 reform and ANEAQ regulatory requirements.

2.2 Dimensions of university performance

Performance dimensions are the substantive areas that evaluation systems seek to measure. These domains are related but different and have different indicators (Neely et al., 1995) . In this sense, our framework positions itself as an operational extension of ANEAQ standards, seeking to transcend purely formal evaluation to capture the micro-processes of societal impact often neglected in current accreditation protocols.

Teaching and learning focus on instructional quality, curriculum relevance, pedagogical innovation, and student outcomes. In the balanced scorecard literature, HEIs have to measure teaching quality to be able to achieve academic excellence and satisfy stakeholders' expectations. These include the ratios of students to staff, graduation rates, student evaluations, employability and the results of accreditation. The problem of graduate employment is said to be aggravated in Morocco by outdated curricula and the lack of harmonization with the needs of the labor market, which implies that curriculum renewal and skills development should be part of performance evaluations (Oraison et al., 2019). Skiredj (2022) proposes that it is interesting to adapt the Balanced Scorecard to Moroccan specificities so that it can better align pedagogical objectives with real market demand, and that a granular assessment of the determinants of the success of graduates requires a holistic digital transformation that goes beyond the mere adoption of technology to create a unified learning space (Bygstad et al., 2022).

Research and innovation facilitate the translation of knowledge generation into societal advancement; common evaluative metrics include publication volumes, research funding, citation indices, patents, industrial alliances, and doctoral graduation rates. World ranking systems appear to prioritize research outputs and citation metrics (Hazelkorn, 2009). Nevertheless, the excessive use of such measures may cause the distortion of academic priorities and underrate the research that has local influence.

The third mission or community work encompasses initiatives facilitating the integration of the university with the society in terms of service, knowledge sharing and partnership. University-community engagement is emerging as an important channel for social innovation, requiring universities to act as change agents in their local settings (Petersen & Kruss, 2021). Community engagement models emphasize collaborative mechanisms such as teaching, research with external partners, service and knowledge exchange, and supportive policies (Petersen & Kruss, 2021). Given the context-dependent nature of community involvement, evaluation often relies on qualitative approaches and participatory methods (Petersen & Kruss, 2021).

Leadership, strategic planning, organisational structure, transparency and accountability are addressed via the mechanisms of governance and management. Critics have noted that global university rankings often lack comprehensive governance and digital indicators. The maintenance of robust governance frameworks appears essential for the alignment of institutional resources with mission mandates, ethical conduct, and the cultivation of stakeholder trust. Moroccan universities have traditionally been governed centrally, with recent reforms aiming to increase institutional autonomy. Such indicators may encompass board composition, the implementation of a strategic plan, risk management and stakeholder participation.

Financial sustainability is the institution's ability to acquire and use resources efficiently : Tuition Government funding Research grants Philanthropic donations But, as Slaughter and

Leslie (1997) argue in their academic capitalism framework, universities are increasingly forced to compete for external funding as state grants fail to keep pace with rising costs. The literature on balanced scorecards also shows that the viability of institutions can be threatened by the deterioration of state finances and intensifying competition caused by economic instability. To counter this, revenue diversification, cost recovery, capital investment and financial ratios are critical indicators of fiscal health. This is in line with Clark's (1998) seminal idea of the entrepreneurial university which argues that the diversification of funding is crucial to reduce financial vulnerability. For Moroccan universities, overreliance on governmental funding and lack of private donations are challenges especially with the increasing enrollment (Bourqia, R. 2016). Indeed, recent studies highlight that this budgetary dependence limits institutions' ability to invest in sustainable infrastructure and foster a culture of innovation, making it necessary to explore new hybrid financing mechanisms and increase government intervention to stimulate institutional investor engagement (Chauffour, 2018).

Access, representation and procedural fairness are integral to equity and inclusion. UNESCO has said that gross enrollment ratios have been hiding the gross disparities in the world. "The global tertiary enrollment ratio was about 40 per cent in 2020, but the corresponding ratio in sub-Saharan Africa was a mere 9 per cent". However, there are still substantial gaps in access to educational opportunities in Morocco, especially in rural areas where gender inequalities appear to be widespread (Conseil Supérieur de l'Éducation, de la Formation et de la Recherche Scientifique, 2019). Performance evaluation frameworks should therefore include indicators on access for disadvantaged populations, gender equality, inclusion of persons with disabilities, socio-economic diversity and student support services. A comprehensive analysis of structural gaps calls for the inclusion of social mobility indicators to evaluate the ability of universities to diminish territorial divides as per the recommendations on equity in sustainable development (Salmi, 2017; Lee et al., 2016).

The integration of digitalisation has emerged as a central imperative within the current context of accelerated technological shifts and the repercussions of the COVID-19 pandemic (Marinoni et al., 2020); this domain encompasses online pedagogical modalities, internet infrastructure, and the fortification of information security frameworks. Digital presence is increasingly considered alongside traditional indicators (Bond et al., 2020). Some of these indicators are access to digital learning platforms, internet networks, digital literacy, open educational resources and incorporation of information systems in teaching and administration. However, to bridge the persistent digital divide, these strategies must prioritize the development of digital literacy to ensure equitable access despite socio-economic disparities (van Dijk, 2020). Internationalisation may be conceptualized as the systematic incorporation of global perspectives and operations within institutional mission statements. Numerous key performance indicators appear essential for monitoring internationalisation, encompassing international student recruitment, student and faculty mobility, the establishment of dual or joint degree programmes, international research collaborations, and internationally oriented governance structures. In the Moroccan context, international collaboration and student recruitment across the Maghreb, Europe, and Africa might facilitate academic excellence and cultural exchange, while positioning these institutions within broader global epistemic communities.

The selection of appropriate indicators necessitates a careful balancing of validity, comparability, and feasibility. Such indicators might reflect core objectives; they should also demonstrate sensitivity to context while avoiding the creation of perverse incentives. The World Bank's critical review observes that performance indicators are often derived from existing data and provide signals about organisational functioning, but they can be controversial because proxy measures may not capture real performance (Behn, 2003). The report cautions that evaluation should complement, rather than replace, judgement and qualitative understanding,

particularly because higher-education institutions differ widely in goals, inputs and structures (Sarrico et al., 2010). For example, in comparing cost efficiency across universities it is important to take into consideration differences in salary levels, campus configurations and government funding (Lawrence & Sharma, 2002). To strengthen the robustness of these models, the performance evaluation should be in line with the requirements of the French National Agency for Evaluation and Quality Assurance (ANEQ), and support the strategic priorities of the PACTE ESRI (Higher Education, Research and Innovation) 2030 that aim at operational excellence and graduate employability. Besides, the integration of analytical frameworks based on digital transformation might permit the evaluation of key performance drivers to prepare professionals able to resolve complex issues (Benavides et al., 2020). In this sense, innovative mechanisms such as the micro-certificate of skills provide greater transparency of the mechanisms for the recognition of prior learning and a more effective matching of academic paths with the changing needs of the labor market (Ahsan et al., 2023). This is supported by the micro-credential frameworks which promote the gradual accumulation of credits and better recognition of skills outside the traditional curricula (McGreal, 2022). At the same time, the use of learning analysis tools seems to offer the unique opportunity to follow in a granular way these trajectories, so to identify the support needs of students in real time, avoiding the risk of dropout (Siemens & Long, 2011; Ferguson, 2012). L'intégration de ces outils analytiques, couplée à une littérature numérique renforcée, permet ainsi de modéliser des environnements d'apprentissage adaptatifs essentiels à l'acquisition de compétences futures (Ferguson, 2012; Viberg et al., 2018).

Table 1 – Performance domains and indicator families

Domain	Example indicators	Reference
Teaching and learning	Student–staff ratios, graduation rates, programme accreditation, employability statistics	(OECD ,2019) (Kuh et al. ,2010) (Barrow & Wagstaff, 1989)
Research and innovation	Publication counts, citation indices, research funding, patents, doctoral completions	(Lovaglio, 2011) (Moed, 2005) (OECD ,2015)
Community engagement	Service-learning participation, community-based research projects, volunteer hours, policy dialogues	(Beard & Humphrey, 2014) (Evans et al., 2009) (Boyer ,1996) (Furco ,1996)
Governance and management	Strategic plan implementation, board diversity, transparency reports, digital presence	(Etzkowitz & Leydesdorff,2000) (Kezar & Eckel, 2004) (Trakman, 2008)
Financial sustainability	Revenue diversification, cost recovery ratios, capital investment, endowment growth	(Johnstone, B. 2002) (Johnstone, 1998) (Estermann et al., 2013)
Equity and inclusion	Access for rural and female students, socioeconomic diversity, disability services, retention of under-represented groups	(Salmi & D'Addio, 2021) (Bourdieu, 1986) (Tinto, 1993)
Digitalisation	Online course offerings, bandwidth per student, digital literacy initiatives, cybersecurity incidents	(Van der Vlies, 2020) (Selwyn, 2022) (UNESCO, 2023)
Internationalisation	International students and staff ratios, mobility programmes, joint degrees, global research partnerships	(De Wit & Altbach, 2021) (Knight, 2004) (Altbach & Knight, 2007)

Source: Compiled by authors

Validity is the extent to which the indicators reflect the phenomena they are supposed to reflect. Student evaluations of teaching quality are subject to bias that is irrelevant to learning outcomes. Research metrics like citation counts may favour English-language journals and disciplines with high publication rates, disadvantaging humanities and local research. Community-engagement metrics may potentially risk the oversimplification of complex relationships if reduced to numbers of partnerships. The Towards a European Framework for Community Engagement in Higher Education (TEFCE) brief suggests that community

engagement is context-specific and that metrics-based approaches may not demonstrate the mutual benefits of university–community activities (Rossi & Rosli, 2015). Valid indicators thus require careful operationalisation and, in some cases, mixed-method approaches combining quantitative and qualitative evidence.

However, to operationalize this comparability in the Moroccan context, ANEAQ would benefit from considering harmonization of these indicators with the transformation objectives of the ESRI PACTE 2030, thus ensuring that the evaluation goes beyond the simple measurement of academic performance to reflect the real impact of universities on the national socio-economic ecosystem. The notion of comparability concerns the possible utility of indicators for comparing different institutions. Global rankings tend to homogenize indicators across the world's universities, while often overlooking cultural and systemic differences. The ranking study emphasizes the fact that most of the global ranking systems are based on research performance and ignore governance and digital presence (Hazelkorn, 2015; Salmi, 2009). Moreover, they may not be relevant in countries where the missions of universities include regional development or equity. Comparability also requires consistent definitions; for example, graduation rates may differ depending on whether part-time students are included or how dropouts are counted.

A further layer of complexity is introduced by mission diversity; specifically, institutions possess divergent mandates, which range from research-intensive to teaching-intensive, regional development, or community involvement. Performance metrics derived for research-intensive universities may appear less applicable when applied to regional institutions. According to the World Bank review, indicator systems are advised to be able to identify the diversity of missions and have comparisons only across similar institutions (World Bank, 2017). In Morocco, where universities have both national and regional functions, frameworks of indicators need to be able to distinguish between flagship research universities and access-focused and professionally training institutions. This multidimensional approach, anchored in theories of change adapted to institutional specificities, makes it possible to structure the evaluation by linking interventions to expected results (Kuh et al., 2015).

The quality and availability of data constitute persistent empirical challenges. In several developing nations, there is no developed system of higher education information, and thus the collection of valid data is not possible. In Morocco, the administrative data can be incomplete and/or may not be reliably reported, especially on graduate outcomes and on labor-market linkages. Surveys and bibliometric databases such as Scopus and Web of Science may not adequately represent French or Arabic publications, resulting in the under-representation of domestic scholarship (Mongeon & Paul-Hus, 2016). In addition, it seems there is a lack of open-access data on governance, fiscal management and community engagement. These gaps of information do not facilitate the realization of a correct systemic analysis. As indicated by Boussouf et al. (2024) the stakeholders have fragmented perceptions about the reliability of the current monitoring indicators.

If an institution concentrates on optimizing performance indicators rather than focusing on substantive qualitative development, this can lead to institutional gaming and unintended consequences. Ranking systems can cause a focus on what can be measured and miss out on important things like quality of teaching and pedagogy or community engagement. A pervasive trend in the university ranking literature is that global rankings are increasingly commercialized, advocating for research metrics and pushing institutions to improve citation rates rather than respond to societal needs (Hazelkorn, 2015; Saisana & Saltelli, 2011). Similarly, financial measures may produce cost savings at the expense of standards of education. Transparency, sensitivity to context and a strong oversight are needed to develop non-manipulable indicators. In this sense, the advent of micro-credentials is a strategic lever that if well articulated can be a way of adjusting educational offers without jeopardizing

institutional equity or academic quality standards (UNESCO, 2022 ; Chakroun & Keevy, 2018). Indeed, the modular approach, which is in line with the objectives of the PACTE ESRI 2030, provides an agile response to the needs of professionalization while avoiding the fragmentation risk often associated with the "gig-qualification" in neoliberal economic models (Altbach et al., 2019).

2.3 Contextualization of Performance Metrics within Broader Socio-Cultural Frameworks

To properly assess institutional performance in higher education, it is important to situate the indicators in the complex socio-cultural, regulatory and economic environment specific to the Moroccan context. Morocco's historical linguistic reality with its complex linguistic dynamics of Arabic, Amazigh and French remains highly relevant for the determination of educational outcomes. The growing use of English, particularly in the faculties of science and technology, is a major paradigm shift. It is a pedagogical and strategic change that seeks to contribute to improving the competitiveness of graduates in the international market, based on current analyzes of the evolution of the sector (Bouaziz & Eddouada, 2026). Thus, performance indicators for academic staff and curricula need to take into account these changing linguistic requirements, with an emphasis on the assessment of language proficiency and the provision of English-medium instructional materials.

The regulations and particularly the PACTE ESRI 2030 (National Plan for Acceleration of the Transformation of the Moroccan Higher Education, Scientific Research and Innovation System) have made performance indicators flexible tools for institutional agility and student success. The reform framework seeks to move away from the traditional state-centric models of accountability to the governance, autonomy and transversality of the SDGs (Fifani, 2024; Lamdaghi, 2024). Such a shift necessitates indicators that capture institutional responsiveness to national development priorities rather than merely measuring compliance with historical bureaucratic standards.

Institutional incentives and strategic behavior are still heavily influenced by funding mechanisms. The systemic dependence on state funding, the rise of private providers and increasing competition have led to a demand for a strategic diversification of income streams, a challenge often made worse by the limited capital available for research and infrastructure investment (Assaad et al., 2020). Failure to account for these resource differences in performance indicators can penalize resource-constrained institutions. In addition, the persistent mismatch between university graduates and the labor market is a major concern. There is no empirical evidence that the academic outcomes are more responsive to the needs of the employers (Draissi, 2023; PSE, 2023). Therefore, metrics concerning graduate employment and internship programs must be carefully contextualized against prevailing labor-market conditions and sectoral demand.

Finally, linguistic and socio-cultural determinants should be considered properly. As English is becoming the dominant language and French and Arabic are still the bases of formal education, it follows that indicators of research performance and international collaboration should consider the potential language bias of bibliometric data in an effort to ensure the visibility of non-English publications. Equity remains a significant issue with gender and geographic disparities, especially in rural area access to education, still playing a role in the educational landscape. Research has found that there exist specific infrastructural and socio-cultural implications to educational attainment in rural areas (Chentoufi, 2024). In this context, the existing frameworks of performance evaluation, including those promoted by the Agence Nationale d'Évaluation et d'Assurance Qualité (ANEAQ) need to be reinforced to include variables related to territorial equity and gender parity to provide a more detailed understanding of regional disparities in access to tertiary education. The regional disparity is not only in

difference of language. Equity measurement indicators must be based on geographic distribution and resource allocation. The use of a contextualization lens would then allow for the customization of indicators based on institutional missions, regional contexts, and cultural norms, with the aim of ensuring that measurements lead to fair and significant changes.

2.4 Institutional Ecosystem and Integrated Conceptual Framework

2.4.1 Regulatory, Institutional, and Governance Ecosystem in Morocco

To ensure analytical transparency for an international readership, it is essential to delineate the statutory foundations, mandates, and operational roles of the primary national institutions and policy frameworks governing Moroccan public higher education:

The LMD Architecture (Licence-Master-Doctorat): Promulgated under Law No. 01-00 on the Organization of Higher Education (2000), the LMD reform restructured degree pathways into three standardized cycles (3-year Bachelor's/Licence, 2-year Master's, and 3-year Doctorate). Designed to align Morocco with the European Higher Education Area (EHEA / Bologna Process), the LMD system aimed to enhance student mobility, credit modularity, and institutional governance. However, rapid massification has placed structural strains on LMD implementation, particularly in open-access faculties .

ANEAQ (Agence Nationale d'Évaluation et d'Assurance Qualité): Established as an independent public authority under Law No. 80-12 (2014), ANEAQ holds the national statutory mandate to conduct external quality evaluations and institutional accreditation for public and private higher education institutions, research units, and academic programs. Operating under quality criteria adapted from international benchmarks (including European Standards and Guidelines), ANEAQ serves as the normative benchmark for academic quality assurance in Morocco.

Framework Law No. 51-17 and PACTE ESRI 2030: Framework Law No. 51-17 (2019) established a 15-year statutory roadmap for reforming the education and scientific research system. Operationalizing this law, the Ministry of Higher Education, Scientific Research, and Innovation (MESRSI) launched the PACTE ESRI 2030 (*Plan d'Accélération de la Transformation de l'Écosystème de l'Enseignement Supérieur, de la Recherche Scientifique et de l'Innovation*). PACTE ESRI 2030 transitions university governance from traditional administrative compliance toward dynamic performance contracts, prioritizing graduate employability, pedagogical innovation, digital transformation, and regional socio-economic impact (MESRSI, 2022/2023).

2.4.2 Integrated Conceptual Performance Framework

To resolve the theoretical fragmentation observed in higher education literature, this review synthesizes the Academic Mission Paradigm, the Managerialist Tradition (New Public Management), and the Public Value Paradigm into a unified conceptual framework tailored to public universities (Figure 1).

Rather than viewing these theoretical paradigms as isolated or competing traditions, our framework conceptualizes them as complementary analytical layers:

The Academic Mission Layer provides the normative foundation, prioritizing research excellence, pedagogical quality, and academic freedom (Boulton & Lucas, 2011).

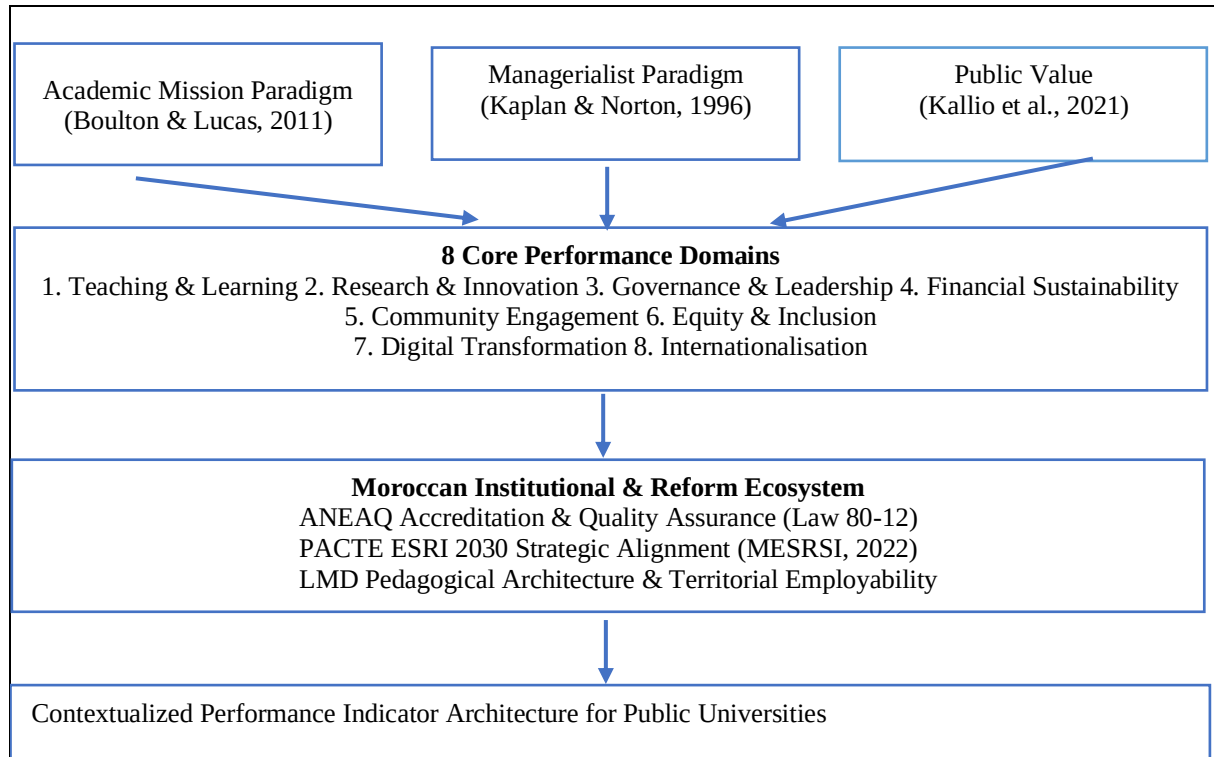
The Managerialist Layer introduces operational steering mechanisms (e.g., Balanced Scorecards, DEA efficiency models, and performance dashboards) to ensure administrative accountability and fiscal stewardship (Kaplan & Norton, 1996).

The Public Value Layer grounds evaluation in social responsiveness, territorial alignment, equity, and sustainable development (Kallio et al., 2021).

As illustrated in Figure 1, these three theoretical pillars converge to directly inform the eight core performance domains (*Teaching & Learning, Research & Innovation, Governance &*

Leadership, Financial Sustainability, Community Engagement, Equity & Inclusion, Digital Transformation, and Internationalisation). In Morocco, this evaluative matrix is operationally bounded by the regulatory mandates of ANEAQ (Law No. 80-12) and the strategic priorities of the PACTE ESRI 2030 reform (Law No. 51-17). This integrated architecture provides the analytical lens used to evaluate the empirical evidence throughout this review.

Figure 1: integrated conceptual performance framework



Source: Compiled by authors

3 Methodology

This review was conducted by a systematic approach according to the recognized guidance for systematic literature reviews and meta-analyses. A protocol was established to enhance transparency and reproducibility. The research design was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, providing procedures for the identification, screening, eligibility, and inclusion of studies. Although the review was not prospectively registered, it was based on predefined research questions, databases, search strings, inclusion and exclusion criteria, and quality-appraisal procedures.

This study was conducted following the reporting standards of Page et al. (2021) and a PRISMA flow diagram is provided to record the study-selection process. The Mixed Methods Appraisal Tool (MMAT) is also employed for assessing the methodological quality of the selected publications and for enhancing the evaluation of their scientific rigor. To contextualize the review within the Moroccan higher education context, the search strategy included terms related to quality-assurance standards of the National Agency for Evaluation and Quality Assurance of Higher Education and Scientific Research (ANEAQ) and reference frameworks of the High Council for Evaluation of Research and Higher Education (HCERES). This method has made it possible to analyze the performance of the university in the face of the normative and institutional challenges specific to the Francophone higher education (Rahmani et al., 2024).

The complexity and multidisciplinary nature of the performance evaluation of universities justifies the application of a systematic review. The first scoping of the literature showed that

relevant studies are found in education management, economics, sociology, and computer science. Systematic approach will ensure full coverage of the topic and will help reduce the risk of selection bias. The review also used an approach to identify relevant studies and compile a list of indicators, similar to the mapping of key performance indicators of internationalization, using Google Scholar and Scopus. The review process was guided by the PRISMA framework (Page et al., 2021).

To improve the completeness and robustness of the review, the search strategy was extended by five other sources of information, namely, World Bank, UNESCO, Scopus, Web of Science and ERIC. The inclusion of these sources permitted greater interdisciplinary and international coverage and improved reproducibility of the search process (Booth et al., 2022).

3.1 Review Design and Protocol

We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement to provide a strong reporting framework (Page et al., 2020). The PRISMA 2020 statement comprises a 27-item checklist that spans the sections of title, abstract, introduction, methods, results, discussion and funding. In an effort to ensure methodological rigor we systematically describe the search strategy, inclusion/exclusion criteria, data extraction procedures and risk of bias. Furthermore, a PRISMA flow diagram is employed to transparently summarize the identification, screening, and inclusion of records at each stage, thereby facilitating the critical appraisal and reproducibility of this research.

3.2 Information Sources and Search Strategy

The principal bibliographic databases selected for were Scopus and Web of Science due to their broad coverage of peer reviewed journal articles and conference proceedings in all disciplines. Their complementary coverage can increase the comprehensiveness of systematic searches, in particular when the review concerns an interdisciplinary topic (Bramer et al., 2017; Gusenbauer & Haddaway, 2020). Google Scholar was also used as a search tool to identify other scholarly publications, institutional documents, theses, policy papers and other gray literature. However, because its indexing procedures and search results are less transparent and reproducible than those of curated bibliographic databases, Google Scholar was not treated as the sole source of evidence (Haddaway et al., 2015; Gusenbauer & Haddaway, 2020).

International education statistics and policy documents were collected from official repositories of UNESCO and World Bank. These platforms were considered as complementary information sources and not bibliographic databases since they provide statistical indicators, institutional reports, policy analyzes and country-level data pertinent to higher education governance and performance. The Education Resources Information Center (ERIC) was also searched for research on educational management. PubMed Central was searched, selectively, for interdisciplinary studies in health, social and public-sector dimensions of performance evaluation. The combined use of these sources enabled the review to incorporate education-related, management-oriented, policy-based, and cross-disciplinary evidence.

The search was restricted primarily to publications written in English or French. Documents published in other languages were excluded because of translation and appraisal constraints. The linguistic restriction was a practical necessity, but may have introduced language bias, by excluding relevant studies and official policy documents in Arabic. This is particularly relevant in the Moroccan context as governmental and institutional documents written in Arabic may contain significant details concerning university governance, accountability, reform and performance management (Page et al., 2021; Higgins et al., 2022).

Search strategies were designed to address the research objectives and were refined through preliminary pilot searches. Relevance of the retrieved results was assessed, recurrent terminology identified and the precision and sensitivity of the final search strings improved by

pilot testing. The principal concepts included university performance, performance evaluation, Morocco, public universities, performance indicators, data envelopment analysis, balanced scorecard, university rankings, third mission, community engagement, internationalization, digitalization, and equity. Synonyms and related terms were combined using Boolean operators. For example, terms such as “higher education” and “university” were linked with the operator OR, whereas the main conceptual categories were combined with AND. In an effort to improve the retrieval of relevant literature in two languages, English and French equivalents were added, such as *évaluation de la performance* and *indicateurs de performance*.

Searches were limited to the title, abstract and keyword fields wherever possible to increase contextual relevance. Further refinement of the results in Scopus and Web of Science was done using the relevant disciplinary categories for the review, including education, management, social sciences and information systems. The search included publications from 1992 to 2025. This period was selected as it covers the advent of systematic approaches to university performance measurement, as well as more recent developments regarding digitalization, internationalization, accountability and the third mission of universities. We also performed backward citation searching on the reference lists of seminal and highly relevant publications. Where appropriate, forward citation searching was also conducted to identify later studies that had cited key publications. These techniques may assist to identify relevant records that can be missed by keyword searching alone and also diminish the chance of missing influential or poorly indexed studies (Wohlin, 2014; Papaioannou et al., 2010). All identified records were subsequently screened according to the predefined eligibility criteria, with duplicate records removed before the title, abstract, and full-text screening stages.

3.3 Eligibility Criteria and Selection Process

To ensure consistency, transparency, and reproducibility during the screening process, eligibility criteria were pre-defined (Higgins et al., 2022; Page et al., 2021). Studies were eligible for inclusion if they met the following criteria: (a) they addressed the assessment or measurement of higher education institutional performance; (b) they employed clearly defined performance indicators, measurement instruments, or evaluative frameworks; (c) they were published as peer-reviewed journal articles, scholarly monographs, book chapters, or official policy and institutional reports; (d) they focused primarily on public universities, with particular attention to Morocco or to higher education systems presenting comparable institutional, administrative, or policy characteristics; and (e) they were written in English or French.

Studies were excluded when they focused exclusively on private universities, vocational or technical institutions, or educational settings that were not comparable to public higher education. Conceptual papers were excluded when they did not provide clearly specified performance indicators, analytical criteria, or an applicable evaluation framework. Opinion pieces, editorials, commentaries, and other non-empirical publications were excluded when they lacked sufficient analytical or evidentiary support. Records for which the full text could not be obtained after reasonable efforts were also excluded from the final synthesis. Studies that dealt solely with student achievement or performance in a particular academic subject were not included unless they provided explicit and verifiable indicators of teaching quality, institutional effectiveness or educational performance.

The selection process was carried out according to the principles of PRISMA 2020 statement (Page et al., 2021). All records obtained from the selected databases were exported to reference management software to find and delete duplicate records. The remaining records underwent title and abstract screening, followed by full-text assessment against the predefined eligibility criteria. Where two reviewers independently assessed the records, disagreements were resolved through discussion and, when necessary, consultation with a third reviewer. This aligns with

general guidance to reduce selection bias and increase robustness of decisions made in systematic reviews (Higgins et al., 2022).

Because the initial searches generated a substantial number of records, a preliminary examination of retrieved titles, abstracts, and keywords was conducted to refine the search strategy and identify studies most likely to address higher education performance-evaluation frameworks or the Moroccan higher education context. The search terms and eligibility criteria were subsequently calibrated before the formal screening stage. Pilot screening was conducted on a sample of records to promote a shared interpretation of the inclusion and exclusion criteria and to improve consistency between reviewers. When appropriate, inter-rater agreement may also be reported using a statistical coefficient such as Cohen's kappa (McHugh, 2012).

A PRISMA 2020 flow diagram was used to document the number of records identified, duplicates removed, records screened, reports assessed for eligibility, and studies included in the final review (Page et al., 2021). The diagram provides a transparent account of the movement of records from the initial identification stage to the final inclusion of eligible studies. It also specifies the principal reasons for exclusion at the full-text stage. The visualization of the review process enhances the auditability, transparency and reproducibility of the review process and allows readers to judge how the final evidence base has been constructed (Liberati et al., 2009; Page et al., 2021).

3.4 Data Extraction and Synthesis Plan

A systematic template utilized for data extraction encompassed bibliographics, institutional context, data collection methodologies (quantitative, qualitative, mixed methods, or bibliometric analysis), performance areas, indicators, data sources, findings, and study limitations. In the case of Moroccan and similar studies, other domains obtained contextual attributes like the language policy, the funding regime, the regulatory environment and the socio-economic conditions. Data were summarised in evidence tables that were extracted from the studies. To ensure uniformity, two reviewers separately extracted information from a subset of research; findings were matched, a procedure which appears to have mitigated potential extraction biases.

3.5 Quality Appraisal and Risk of Bias Assessment

The quality appraisal process was developed to clarify included research credibility and rigor. A flexible appraisal instrument was needed to allow for different paradigms, given the different methodological approaches. The quality of quantitative studies was appraised based on sample size, quality of data sources, validity of indicators and robustness of analysis. The qualitative research was assessed for clarity of research questions, sampling, data collection techniques, and researcher reflexivity. Furthermore, bibliometric techniques were evaluated in terms of database topography and soundness of mapping tools. All studies were appraised on a qualitative scale (high, medium, or low) to guide the final synthesis, and the interpretation of results accounted for potential biases, such as publication or selective reporting.

To ensure consistency of this assessment across selected mixed-methods studies, we used the Mixed Methods Appraisal Tool (MMAT), a validated tool for assessing methodological quality of qualitative, quantitative and mixed-methods studies within a single systematic review (Hong et al., 2018). This tool was applied in accordance with the methodological guidance established by Hong et al. (2018), ensuring a consistent assessment of the internal and external validity of the included literature.

The analysis employed both narrative and thematic synthesis approaches and results are organized around the main research questions and the conceptual framework. A typology of performance evaluation methods was constructed through the classification of studies according to their methodological orientation, e.g. indicator scorecards, efficiency methods,

balanced scorecards, ranking analyzes, dashboards and institutional effectiveness models. Evidence tables summarized and presented the performance domains and indicator families. The discussion integrated these findings with contextual factors and methodological limitations. Bibliometric data were strategically used to identify gaps in the literature and to show the geographic distribution of knowledge. The primary objective of the synthesis was to formulate practical recommendations to guide policymakers and university leaders in Morocco. Furthermore, to ensure the robustness of the conclusions, the results were weighted relative to quality scores obtained during the assessment, thereby facilitating the calibration of final recommendations in accordance with the methodological confidence level associated with the examined evidence.

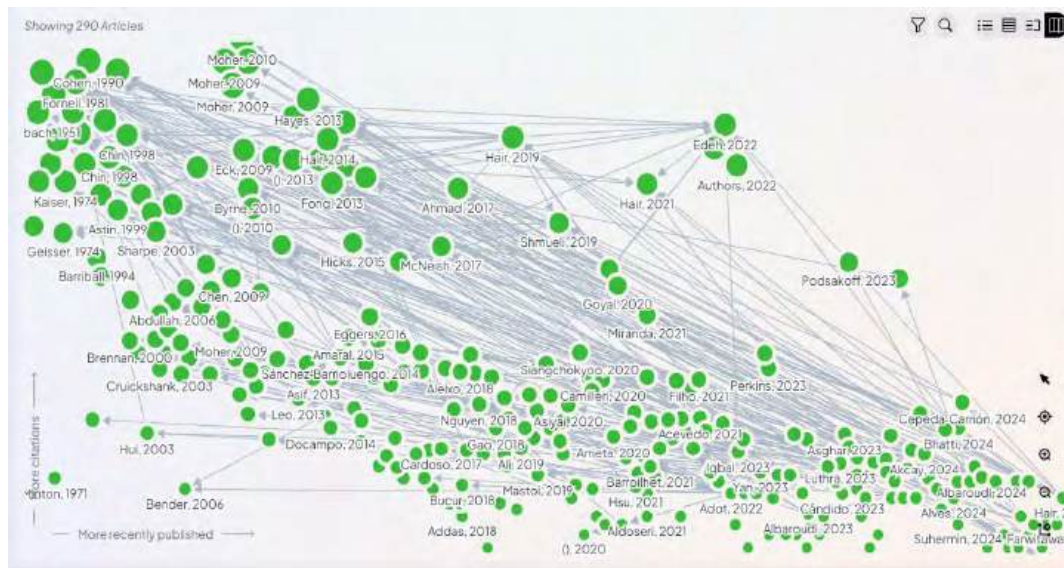
The methodological quality of the included studies in this review was evaluated with the Mixed Methods Appraisal Tool (MMAT, 2018 version). The choice of the MMAT rather than other evaluation tools, such as the Critical Appraisal Skills Program (CASP) or the PRISMA-ScR guidelines, is methodologically justified by the structural diversity of our corpus. CASP is primarily targeted at qualitative research in health care and does not provide standardized benchmarks for quantitative models of efficiency (eg, Data Envelopment Analysis). PRISMA-ScR is a reporting checklist for scoping protocols and not a rigorous quality assessment tool. MMAT is a validated multi-dimensional approach that has been specifically designed for complex systematic reviews with qualitative, quantitative (descriptive and observational) and mixed-methods approaches within a single audit framework .

3.6 Bibliometric Analysis Procedures

To support the narrative synthesis, a bibliometric analysis was performed, since this approach can reveal publication trends, flow of citations, co-authorship networks and thematic clusters (Donthu et al., 2021; Zupic & Čater, 2015). Data were extracted from Scopus and Web of Science and used for the evaluation of the longitudinal publication output. This offers an extensive, but limited view of the indexed literature. Citation analysis was used to identify influential journals, authors and institutions. The intellectual structure of the field was investigated by using co-citation and co-authorship analyzes, while mapping techniques were used to visualize bibliographic relationships (Aria & Cuccurullo, 2017; Maurya & Sinha, 2024). The analysis of the keyword co-occurrence pattern including digitalization, sustainability and social inclusion helped to explore the thematic development and emerging areas of research. In the case of studies related to Morocco, the patterns of collaboration were examined. Citations and co-authorships were used to identify research networks and the level of internationalization. The analysis could also be extended to include grey literature and regional reports, which may capture local empirical dynamics that are often underrepresented in international bibliographic databases and thereby enrich understanding of the specific characteristics of the Moroccan academic context.

As an additional discovery tool, the bibliography search was facilitated by the use of ResearchRabbit to identify potentially relevant publications through citation relationships and links between related scholarly works. The tool was used to supplement rather than replace the systematic searches conducted in Scopus and the Web of Science. The results of the bibliometric analysis were discussed in the light of the coverage limitations of international citation databases as well as the potential underrepresentation of Moroccan and other regional publications.

Figure 2: Map of knowledge for performance in universities



Source(s): ResearchRabbit software used by authors

Table 2: Bibliometric Co-occurrence and Cluster Analysis

Thematic Cluster	Major Associated Keywords	Relative Frequency (%)	Main Period of Emergence	Associated Performance Domains
Cluster 1: Efficiency & Operations	Data Envelopment Analysis (DEA), Frontier Analysis, Inputs/Outputs	28.5%	1992 – 2015	Financial Sustainability, Research Output
Cluster 2: Strategic Management	Balanced Scorecard (BSC), Key Performance Indicators (KPIs), Dashboards	24.2%	2005 – 2020	Governance, Teaching & Learning
Cluster 3: Quality & Governance	Accreditation, ANEAQ, Quality Assurance, Institutional Autonomy	21.3%	2012 – 2025	Governance, Quality Assurance
Cluster 4: Digital & Sustainability	Digitalisation, E-learning, SDGs, PACTE ESRI 2030, Equity, Third Mission	26.0%	2018 – 2025	Digital Transformation, Equity, Community Engagement

Source: Compiled by authors

The bibliometric analysis also shows a clear temporal change of research priorities (Table 2) besides the visual knowledge mapping from ResearchRabbit (Fig. 6). Early research (1992-2015) was mainly focused on quantitative efficiency assessment using the Data Envelopment Analysis (28.5%), while recent studies (2018-2025) show a rapid shift toward digitalization, social inclusion and sustainable development goals (26.0%), in line with current policy needs under the PACTE ESRI 2030 reform.

3.7 Methodological Limitations and Mitigation Strategies

Despite the primary database query being limited to peer-reviewed literature and official reports published in English and French due to linguistic feasibility and indexing constraints in international databases, this limitation is a potential limitation for a contextualized Moroccan review by excluding primary policy documents in Arabic. To address this methodological challenge, two clear steps were taken: (1) the systematic inclusion of official bilingual (Arabic/French) institutional documents issued by the Ministry (MESRSI), ANEAQ and the Higher Council for Education (CSEFRS) and (2) the targeted inclusion of domestic empirical studies evaluating primary Arabic legislative texts (e.g., Framework Law 51-17, Law 01-00). This mitigation strategy guaranties that the unique sociolinguistic and statutory subtleties of

Moroccan university governance are rigorously incorporated, while preserving the systematic review protocol.

The first database search was restricted to peer-reviewed literature and official reports available in English and French for reasons of linguistic practicality and limitations of indexing in global databases. However, this restriction may limit a comprehensive Moroccan review by excluding important policy documents in Arabic. To overcome this methodological limitation, we took two specific actions: (1) systematic inclusion of official bilingual (Arabic/French) institutional documents from the Ministry (MESRSI), ANEAQ and the Higher Council for Education (CSEFRS); and (2) intentional inclusion of national empirical research that focused on primary Arabic legislative texts (e.g. Framework Law 51-17, Law 01-00). This mitigation approach guaranties that the distinctive sociolinguistic and legal intricacies of Moroccan university administration are meticulously documented without undermining the systematic review framework.

4 Results

4.1 PRISMA Flow Results and Exclusion Motifs

Table 3: Categorized Reasons for Full-Text Study Exclusion (N=218)

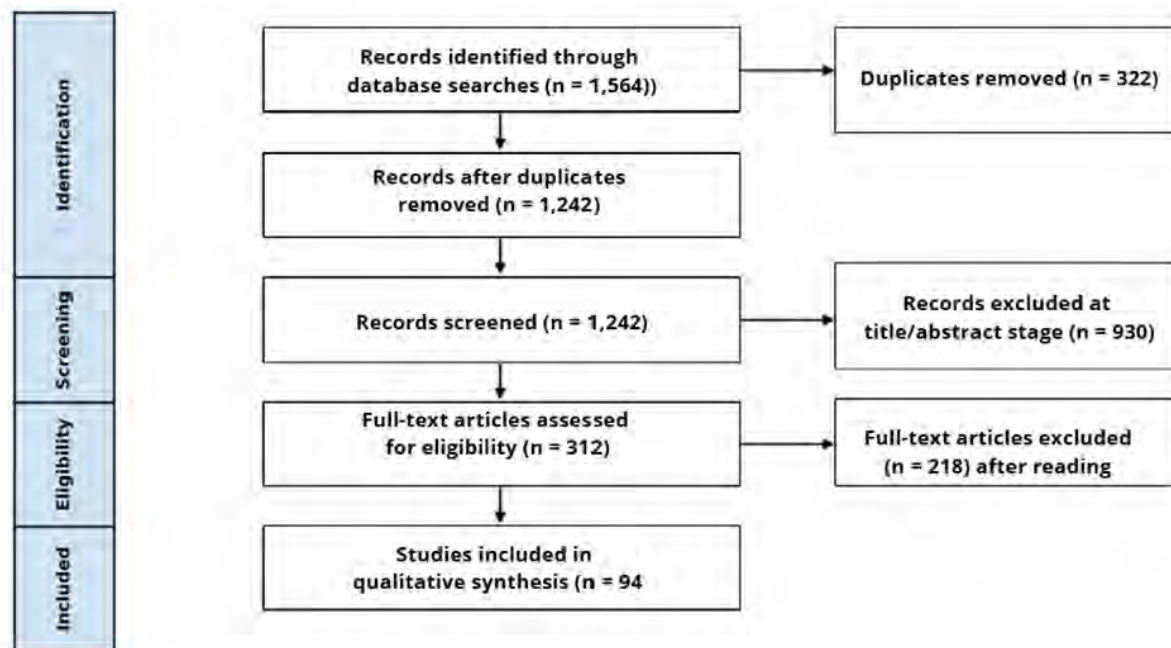
Exclusion Category	Description & Primary Criteria	Excluded Studies (n)	Percentage (%)
Absence of Explicit Indicators	Conceptual papers or general discussions lacking operationalized performance metrics or evaluation frameworks.	84	38.5%
Non-Public / Non-University Scope	Studies focusing exclusively on private universities, vocational institutes, or non-tertiary education sectors.	52	23.9%
Micro-Level Student Focus Only	Research limited strictly to individual student exam performance or classroom grading without institutional or teaching quality metrics	41	18.8%
Lack of Empirical / Methodological Rigor	Opinion pieces, editorial commentaries, or review protocols lacking verifiable empirical or analytical substantiation.	26	11.9%
Full-Text Inaccessibility / Duplicates	Articles where full-text could not be retrieved after author contact, or redundant secondary reporting of identical datasets.	15	6.9%
Total Excluded Full-Text Studies	Full-text studies evaluated but excluded from final synthesis	218	100.0%

Source: Compiled by authors

The search strategy identified 1,242 records after removing duplicates. After title and abstract screening, 312 studies remained for full text review. Of these, 94 met the pre-specified inclusion criteria and were included in the synthesis. The major reasons for studies excluded at the full-text stage were the lack of explicit performance indicators and the study of private universities. Figure 3 displays the entire study-selection procedure, including the stages of identification, screening, eligibility, and inclusion, according to the PRISMA 2020 guidelines (Page et al., 2021).

From the 312 full-text articles assessed for eligibility, 218 studies were excluded. In full compliance with PRISMA 2020 reporting standards, the specific reasons for study exclusion were systematically categorized and quantified (Table 3). The most common reason for exclusion was the lack of specific, institutional-level performance indicators or evaluation frameworks (n=84, 38.5%) and the sole focus on private higher education institutions or non-university vocational sectors (n=52, 23.9%).

Figure 3: PRISMA Flow Diagram of the Study Selection Process



Source: Compiled by authors

4.2 Descriptive profile of included studies

The 94 articles covered the time period 1992–2025, and a significant increase in the number of publications was observed after 2010. Overall, 60 percent of the analysis was global, or comparative, and 40 percent was regional. Only 12 of the studies addressed specifically Morocco or North Africa, which suggests a paucity of research on performance evaluation in this regard. Disciplinary perspectives encompassed education management, economics, operations research, sociology, and information systems. The major methods were quantitative methods especially the data envelopment analysis, qualitative case study and mixed-methods designs. The main areas of performance were teaching, learning and research, and then governance and internationalization. Potential gaps identified in global analytical structures are under-reliance on equity, digitalization and community engagement (Compagnucci & Spigarelli, 2020; Tang et al., 2025). However, this observation of a lack of research should be qualified: recent works such as those by Boussof et al. and Ouajdouni demonstrate an active research dynamic, highlighting that Moroccan literature is characterized more by its fragmentation and the absence of standardized frameworks than by a true emptiness.

The data acquisition methodologies were significantly varied. Many made use of secondary data sources, including administrative records, national statistics, bibliometric databases and ranking tables. Student surveys, faculty and employer surveys gave data on perceptions and satisfaction. Interviews and document analysis were common in case studies. Longitudinal data appear to have been utilized by only a limited subset of studies intended to capture temporal trends. In the case of Moroccan studies, the information sources were reports by the ministries, institutional documents, and interviews with university personnel (Bowen, 2009; Yin, 2018). These approaches, when rigorously applied, remain essential for capturing institutional nuances that quantitative metrics often overlook.

4.3 Bibliometric Knowledge Network and Cluster Analysis

The trend in publications suggests that articles on university performance evaluation experienced accelerated growth post-2010, coinciding with the proliferation of global ranking

and quality assurance reforms. Prominent venues included Higher Education, Journal of Higher Education Policy and Management, Studies in Higher Education and International Journal of Education Management. Analysis of citations has shown that the works of the World Bank Group and the Organisation for Economic Co-operation and Development appear to be highly cited, potentially influencing the discourse surrounding policy formulation. The co-authorship networks revealed that there was a high degree of collaboration among researchers in Europe and Asia, but African scholars were not much involved. Less than 2 percent of the publications were attributed to Moroccan authors, which suggests a pressing necessity for the enhancement of research capacity and the cultivation of international collaborative networks. The analysis of the keywords' co-occurrence revealed the following clusters around the performance indicators: efficiency, balanced scorecard, data envelopment analysis, ranking, quality assurance, student satisfaction, governance, digitalisation, internationalisation, equity, and community engagement. The emergence of the digitalisation and sustainability topics since 2018 suggests a significant shift in strategic priorities. Nevertheless, equity and community engagement were less common, indicating existing research gaps. Bibliometric mapping also revealed that the studies about the methods of data envelopment analysis were focused on the operations research journals, whereas the studies about balanced scorecards were common in the management and education publications. Ranking research papers typically appeared in general higher-education journals and were usually Asian or European.

4.4 Methodological Quality Appraisal Results (MMAT)

According to the synthesis, the literature identifies six principal modalities of university performance evaluation: indicator scorecards, efficiency models, balanced scorecards, ranking analyses, key performance indicator (KPI) dashboards, and institutional effectiveness models. These modalities reflect different theoretical perspectives on performance, including accountability, organizational efficiency, strategic management, benchmarking, and continuous improvement. Regarding contextual adaptation, Skiredj (2022) demonstrates the potential of a balanced-scorecard framework tailored to Moroccan universities, particularly through the integration of strategic priorities related to internal processes, human-resource governance, and institutional development.

An indicator scorecard consolidates indicators used in policy frameworks or institutional strategies. These indicators commonly address teaching quality, research productivity, financial performance, community engagement, and institutional services. They may be derived from national performance-monitoring systems or international policy frameworks, including the UNESCO Education 2030 Agenda (UNESCO, 2015). Although scorecards provide a broad overview of institutional performance, they may fail to reflect the specific missions and contextual conditions of individual universities. Their effectiveness also depends heavily on the availability and reliability of data. If poorly designed, scorecards may encourage administrative compliance rather than substantive institutional improvement.

Efficiency models, particularly Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA), assess the relative efficiency of decision-making units by comparing their inputs and outputs. DEA, originally developed by Charnes et al. (1978), has been widely applied to higher education in order to evaluate the efficiency of universities, faculties, and academic programmes in producing outputs such as graduates, publications, research income, and other institutional outcomes. These models provide useful comparative benchmarks; however, they may oversimplify the multidimensional nature of university activities. Their validity depends on the careful selection of input and output variables, the quality of the available data, and the comparability of institutional missions (Coelli et al., 2005). These limitations are particularly relevant in Morocco, where universities differ in their institutional profiles, resources, disciplinary structures, and strategic priorities. In this respect, Skiredj's (2022) proposed

adaptation of the Balanced Scorecard offers a complementary approach by integrating context-specific strategic dimensions and supporting the organization of institutional data despite the diversity of university missions.

Balanced-scorecard methodologies adapt the framework developed by Kaplan and Norton (1992, 1996) to the higher education context. They combine financial, internal-process, learning-and-growth, and stakeholder perspectives in order to align institutional activities with strategic objectives. In universities, this approach can connect institutional missions with indicators related to teaching, research, governance, student services, human-resource development, and societal engagement. Balanced scorecards may therefore strengthen strategic coordination and institutional accountability. However, their implementation requires substantial organizational capacity, reliable information systems, clearly defined responsibilities, and sustained managerial commitment. Institutions with limited resources may consequently encounter difficulties in designing, implementing, and maintaining such systems. In Morocco, the approach may be relevant to the requirements of the LMD system and to the quality-assurance and accreditation frameworks associated with ANEAQ. Its implementation should nevertheless take into account the organizational characteristics, institutional capacities, and strategic priorities of Moroccan universities.

Ranking analysis examines the position of universities within national or international classification systems and evaluates the assumptions underlying the indicators used to construct these rankings. Rankings provide visible comparative benchmarks and may influence institutional strategies, reputational priorities, and resource-allocation decisions. However, their emphasis on research productivity, international visibility, and reputational indicators may underrepresent teaching quality, governance, digital capacity, social inclusion, and national context (Hazelkorn, 2015; Marginson & van der Wende, 2007). Rankings should therefore be interpreted as limited benchmarking instruments rather than comprehensive measures of institutional performance. The development of national or context-sensitive ranking frameworks could incorporate dimensions more relevant to Moroccan universities, including governance, employability, social contribution, digital transformation, and regional engagement. Nevertheless, excessive reliance on rankings may distort institutional priorities and encourage competitive behaviour at the expense of collaboration and public-service missions.

Key performance indicator (KPI) dashboards function as dynamic monitoring systems that present selected managerial and stakeholder indicators through tables, graphs, and other visualisations. In higher education, dashboards can support the monitoring of enrolment, student progression, graduation rates, research output, budget execution, staff development, and quality-assurance activities. The increasing integration of digital technologies and artificial intelligence may further enhance the capacity of higher-education institutions to collect, process, and interpret performance-related information, while also creating challenges related to governance, data quality, professional competencies, and ethical oversight (Boussouf et al., 2024). When indicators are clearly defined and directly aligned with institutional objectives, KPI dashboards can improve organizational transparency, facilitate evidence-based decision-making, and enable managers to identify emerging problems. However, the accumulation of poorly prioritized indicators may generate information overload and reduce the practical value of the system. Dashboards should therefore be designed according to a limited set of valid, reliable, and strategically relevant indicators rather than according to the volume of data available. Institutional effectiveness models focus on the capacity of universities to achieve their stated missions and to use evidence for continuous improvement. These models generally emphasize learning outcomes, institutional assessment, planning, resource allocation, and the systematic use of evaluation results in decision-making. Institutional effectiveness is consequently not limited to the measurement of outcomes; it also concerns the organizational

processes through which evidence is interpreted and translated into improvement actions (Terenzini, 1987; Whitt et al., 2013). Effective implementation requires an institutional culture that values assessment, collaboration, transparency, and sustained engagement at the unit level. In the Moroccan context, institutional effectiveness models may be particularly relevant when aligned with ANEAQ's assessment and accreditation requirements. Such alignment could help connect the evaluation of learning outcomes with institutional planning, quality assurance, and the continuous improvement of national higher-education standards.

Table 4 – Typology of performance evaluation approaches

Approach	Description	Strengths and limitations	Reference
Indicator scorecards	Compilations of multiple indicators covering teaching, research, finance and service	Comprehensive coverage; easy to communicate; may lack prioritisation and contextualisation	Cave et al. (1997); Behn (2003); OECD (2008)
Efficiency methods (Data Envelopment Analysis/Stochastic Frontier Analysis)	Compare inputs and outputs to assess relative efficiency of units	Provides benchmarks; sensitive to input–output selection; may oversimplify processes	Charnes et al. (1978); Aigner et al. (1977); Johnes (2006)
Balanced scorecard	Integrates financial, internal, learning and stakeholder perspectives to align activities with strategy	Holistic and strategic, implementation requires capacity and may be resource intensive	Kaplan et Norton (1992, 1996); Niven (2008); Umashankar et Dutta (2007)
Ranking analyses	Evaluate universities' positions in league tables and analyse ranking criteria	Provide external benchmarks, which can motivate improvement but may emphasise research and ignore context	Dill et Soo (2005); Hazelkorn (2015); Marginson (2007)
Key Performance Indicator (KPI) dashboards	Real-time visualisation tools tracking key metrics	Enhance transparency and decision-making; they may risk oversimplification or information overload	Few (2006), Eckerson (2010), Neely et al. (1995), Behn (2003) et Parmenter (2015).
Institutional effectiveness models	Frameworks focused on learning outcomes and continuous improvement	Emphasise evidence-based decision-making; require culture change and institutional commitment	Astin (1991; Banta & Palomba (2015) Ewell(1984)

Source: Compiled by authors

4.5 Delineation of Performance Domains and Indicator Frameworks

The literature identifies several families of indicators corresponding to eight core performance domains. Teaching and learning are commonly assessed through student–staff ratios, graduation rates, programme accreditation, student satisfaction and graduate employment outcomes (Kuh et al., 2008). Publication output, citation impact, research funding, patents and doctoral completion are used as indicators to assess research performance (Moed, 2005). Community engagement is measured by participation in service-learning activities, community-based research, volunteering, academic staff participation in public debate and community access to university facilities (Furco, 1996). Governance indicators are mainly about board composition, institutional transparency, implementation of strategic plans and the use of digital communication channels. Indicators used in determining financial performance include revenue diversification, cost recovery, capital investment and allocation of institutional resources (Ewell, 2009; OECD, 2024).

Equity indicators are focused on access for underrepresented groups, student retention and availability of support services. The digitalization is measured by offering online courses, digital infrastructure, online literacy programs and cyber security policies (Siemens, 2013). Internationalisation indicators include the proportions of international students and staff, mobility programmes, joint-degree initiatives and international research partnerships.

To apply these indicators in the Moroccan context, it is necessary to have a strategic alignment with the National Plan for Accelerating the Transformation of the Ecosystem of Higher Education, Scientific Research and Innovation (PACTE ESRI 2030). This framework prioritises graduate employability, institutional performance and the territorial socio-economic contribution of universities. Accordingly, performance assessment should encompass the university's "third mission," including knowledge transfer, community engagement and contribution to local development.

This approach requires evaluation mechanisms capable of reflecting the complex interactions between universities and their socio-economic environment. Governance and accreditation indicators should be harmonised with the operational standards of the National Agency for Evaluation and Quality Assurance of Higher Education and Scientific Research (ANEAQ). These indicators should be flexible to the national and territorial particularities and not only based on the international frameworks that can't reflect the local realities (Dziubaniuk et al., 2023).

4.6 Data sources used in performance evaluation

The data used to assess higher education performance vary according to the indicator and the evaluative context. Administrative records constitute a central source of information on enrolment, graduation, staffing and institutional finances. Although these records are generally accessible, they may provide limited granularity on learning outcomes, student experience and community engagement (Ewell, 2009).

Bibliometric databases, such as Scopus and Web of Science, are widely used to measure publication output and research collaboration. Coverage is irregular especially for French and Arabic language publications. These limitations are relevant to the Moroccan setting, as reliance on international databases might not offer a complete view of the national research output (Myers et al., 2020). Teaching quality, student satisfaction and graduate employability data are collected through surveys of students, faculty and employers (Kuh et al. 2008). National statistics and audit reports provide further data and help give a broader view of funding and equity. Institutional procedures and regulatory compliance can also form part of accreditation and quality assurance review reports (Harvey & Green, 1993). By contrast, community engagement is often assessed through qualitative methods, such as interviews and case studies (Furco, 1996).

Performance data in Morocco remain comparatively fragmented. Although reports from the ministry and documents of the institutions provide useful information, systematic data collection on institutional outcomes is still in its development (Bouziane & Elaasri, 2019). Triangulation of administrative, bibliometric, survey-based and qualitative data is crucial to improve validity of performance measurement. In addition, the institutional funding mechanisms, especially the contractual ones, have proved to have a significant impact on the scientific performance and the volume of the research output of Moroccan universities (Boussouf, 2021).

Table 5: Data sources for performance evaluation

Data source	Characteristics	Advantages and limitations	Reference
Administrative records	Enrolment, graduation, staffing, finance data maintained by institutions	These data are generally accessible; however, they may lack granular detail regarding learning outcomes and community engagement.	(Ewell, 2009)
Bibliometric databases (Scopus, Web of Science)	Research output and citation data	These databases facilitate international comparisons; nevertheless, they may under-represent non-English publications.	(Moed, 2005)
Surveys	Questionnaires for students, faculty, employers	These surveys capture subjective perceptions, though findings may be subject to response bias and limited representativeness.	(Kuh et al., 2008)
National statistics	Government data on enrolments, funding, labour-market outcomes	Such datasets facilitate macro-level analysis, although they may appear outdated or overly aggregated.	(OECD, 2024)
Audits and accreditation reports	External evaluations of quality and compliance	These reports provide qualitative insights; however, they may over-emphasise compliance at the expense of innovation.	(Harvey & Green, 1993)
Community-engagement assessments	Interviews, focus groups, case studies	These methods capture the nuanced impact of the third mission, although this analysis may be resource-intensive and context-specific.	(Furco, 1996)
Digital analytics	Platform usage, website traffic, online participation	These analytics provide real-time data on digital engagement, though they may be constrained by privacy concerns and platform dependence.	(Siemens, 2013)

Source: Compiled by authors

4.7 Evidence related to Morocco and comparable systems

Only a small subset of the reviewed studies focused directly on Morocco. The available evidence highlights several structural features of Moroccan higher education, including the effects of the country's multilingual heritage, the coexistence of Arabic and French, and the gradual emergence of English as an important language for scientific communication. These linguistic dynamics continue to influence teaching, research, international cooperation and curriculum development (R'boul, 2022; Soussi, 2020).

The literature also tells of the evolution of higher education in Morocco since independence. The expansion of the public sector, Arabization and the integration of different educational pathways have contributed to a wider access to higher education (Llorent-Bedmar, 2014). However, these developments have also generated persistent challenges relating to institutional capacity, the coordination of educational tracks and the alignment between university training and labour-market requirements. Historical accounts report that, during the 2002–2003 academic year, Morocco had approximately 68 higher-education institutions and 14 universities serving around 290,000 students. These figures should be interpreted in relation to the subsequent expansion and restructuring of the higher-education system.

Language policy has become increasingly important in the reform of Moroccan higher education. Although Arabic and French remain central to the national educational system, English is gaining importance in scientific research, doctoral education and international academic communication. This transition is associated with internationalization opportunities, access to indexed journals and attraction of international students (R'boul, 2022). But it also poses structural challenges, especially to students and academics who have differential access to language training and digital resources. The increased use of digital tools does not, by itself, guarantee improvements in academic efficiency or educational quality.

The literature on higher-education reform further indicates that the implementation of the Licence–Master–Doctorate system did not eliminate all structural weaknesses. Moroccan universities continue to face challenges related to interdisciplinary education, the relevance of professional training, cooperation with employers, graduate employability and the coordination

of public and private provision. Brain drain and the increasing importance of English as a global language also affect institutional strategies. These issues demonstrate the need for performance indicators that capture curriculum relevance, graduate employment, internationalisation and cooperation with the socio-economic environment.

In this context, the PACTE ESRI 2030 framework seeks to reconceptualize the strategic management of Moroccan universities. Its priorities are graduate employability, scientific excellence, innovation, territorial development and stronger links between universities and their socio-economic environments. Performance evaluation must therefore go beyond traditional indicators such as student numbers and publication counts, to include measures of the relevance of training, graduate outcomes, research impact and territorial engagement. Studies on the performance of Moroccan universities also point to the need to take into account the points of view of the different stakeholders involved in institutional activities (Boussouf, 2021).

Comparable higher-education systems in the Maghreb, the Middle East and Sub-Saharan Africa face related challenges. These include massification, limited financial and infrastructural resources, weaknesses in governance, uneven quality-assurance capacity and brain drain. Such similarities support the development of contextualised performance indicators while cautioning against the uncritical transfer of evaluation models developed in high-income countries. Indicators should reflect the institutional missions, socio-economic conditions and development priorities of each national system.

4.8 Identified gaps and unresolved methodological issues

Several gaps emerge from the reviewed literature. First, equity and inclusion remain insufficiently integrated into higher-education performance evaluation. The studies are mainly focused on teaching and research and pay little attention to access for disadvantaged groups, gender equality, inclusion of people with disabilities and regional disparities (Tinto, 2012).

Second, the effects of digitalization of higher education and online learning on institutional performance are under-researched. Existing evaluation frameworks often measure the availability of digital platforms or online courses without adequately examining digital readiness, the quality of online teaching, student engagement or inequalities in access to digital resources (Altbach & Hazelkorn, 2018; Bond et al. 2020).

Third, it is hard to measure community engagement. Quantitative indicators can monitor the number of partnerships, projects or activities, but may not reflect the wider social and territorial value of the engagement of universities. Participatory assessment methods are therefore necessary to capture the perspectives of communities, local organisations and other external stakeholders (Boyer, 1996; Watson et al. (2007).

Fourth, the availability and quality of data may restrict the application of advanced methods such as Data Envelopment Analysis and bibliometric analysis. In many contexts, administrative, financial, academic and social data are fragmented or collected according to Finally, longitudinal research remains limited. The predominance of cross-sectional studies makes it difficult to assess the long term effects of reforms, or whether changes in performance are due to institutional strategies, additional resources or wider social and economic developments. The limited number of Morocco-specific studies further constrains the development of performance frameworks adapted to national and regional realities. Future research should therefore incorporate structural inequalities, territorial disparities and the unequal distribution of institutional resources.

incompatible definitions. This fragmentation limits the reliability of comparisons between institutions.

4.9 Efficiency and Data Envelopment Analysis in African universities

Performance evaluation may incorporate efficiency-measurement techniques derived from

operations research, particularly Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA). The above mentioned approaches are based on the premise that universities are decision making units that transform inputs such as academic staff, financial resources and infrastructure into outputs such as graduates, publications, patents and community services (Johnes,2006).

DEA builds a frontier from the performance of the most efficient institutions and then measures the relative efficiency of the other institutions to the frontier. This approach can be used in higher education to identify relatively efficient institutions based on their outputs relative to their resources available. It can also reveal areas where resource allocation or organisational processes may be improved.

But there are serious methodological problems in the application of DEA to universities. The choice of inputs and outputs can have a huge impact on the results. If evaluation is based only on the number of graduates or publications, institutions with medical, engineering or laboratory intensive programs may seem inefficient because these programs require substantial resources. Similarly, teaching quality, knowledge transfer, student support and community engagement cannot be fully represented through simple numerical indicators.

Studies conducted in African higher education indicate that efficiency scores may vary considerably according to the variables included in the model. Results can be affected by governance arrangements, levels of funding and distribution of staff and institutional missions. The addition of indices such as graduate employment and community engagement can have a huge impact on an institution's ranking. This suggests that conventional academic outputs represent only one dimension of university performance.

The use of cross-sectional administrative data also limits the ability of DEA studies to explain differences in educational quality or to assess the long-term social contribution of universities. The sensitivity of the results to the choice of variables, together with the difficulty of incorporating qualitative outcomes, demonstrates the need for a cautious and multidimensional approach. DEA can be helpful to obtain analytical insights but should be complemented with qualitative evaluation, stakeholders' engagement and context analysis (Cooper et al., 2011; Johnes,2006).

4.10 Quality assurance and balanced scorecards: lessons for Morocco

Quality assurance and performance evaluation are closely connected. A balanced scorecard can provide a practical framework for translating institutional strategies into objectives, indicators and monitoring procedures. Usually it takes into account various dimensions, such as financial sustainability, internal processes, learning and development, and stakeholder views (Guthrie et al., 2024).

In higher education, the balanced scorecard can help align teaching, research, governance and community engagement with the priorities of the institution. It can also help to clarify responsibilities, facilitate monitoring of results and promote the use of evidence in making strategic choices. However, its effectiveness depends on the availability of reliable data, institutional coordination and the capacity of university units to use performance information. A balanced scorecard should not replace participatory quality-assurance mechanisms. Peer review, student feedback, staff consultation, employer engagement and community participation remain necessary to ensure that institutional indicators reflect a broad range of experiences. Combining quantitative indicators with qualitative evidence can help prevent performance evaluation from being reduced to a purely numerical exercise.

In Morocco, quality assurance must also address the persistent gap between graduate profiles and labour-market requirements. Indicators relating to curriculum relevance, employer satisfaction, internships, graduate employment and the professional integration of graduates should therefore be incorporated into institutional evaluation frameworks. Closer cooperation

with employers and regular examination of study programs ensure that university training is better attuned to the demands of society and the economy (European Commission & OECD, 2024).

In this regard, the performance evaluation of Moroccan institutions should be a mix between institutional effectiveness models and stakeholder-based approaches. Quantitative indicators can inform us about outputs and trends, but qualitative research can identify the organizational, pedagogical and social factors that explain variation in performance. This combination is particularly important for understanding employability and the adequacy of acquired skills in the Moroccan context (Boussouf, 2021).

4.11 Digitalization and impact of the COVID-19 pandemic

The COVID-19 pandemic has accelerated the digitalization of higher education worldwide . This forced universities to move to online teaching, digital assessment and remote academic administration, often with little preparation. The experience revealed substantial differences in institutional readiness, infrastructure, pedagogical capacity, staff competencies and student access to digital resources (Crawford et al., 2020; Goudeau et al., 2021).

Besides the availability of digital platforms, the effectiveness of emergency online education relied on the quality of pedagogical design, institutional support and digital competencies of teachers and students. Students and lecturers did not always share preferences for online education. A number of students welcomed the flexibility of online learning and assessment, but many lecturers wanted to return to face-to-face teaching.

The pandemic deepened inequalities between higher education systems, and within institutions. Universities with mature online courses, reliable digital infrastructure and trained staff were better placed to guaranty educational continuity. Institutions with low connectivity, poor equipment or limited technical support had to resort to improvisation (Bond et al., 2020).

These observations have important implications for the evaluation of universities in Morocco. “Digitalisation should not just be measured by counting online courses, platforms or digital devices. Performance frameworks should also examine institutional readiness, staff training, student access, the quality of online learning, user satisfaction and the resilience of academic and administrative systems.

Relevant indicators may include:

the proportion of courses supported by effective online or blended-learning arrangements; access to reliable internet connections and appropriate computing equipment; the availability of technical support for students and staff; the implementation of digital-literacy programmes; the quality and accessibility of digital learning materials; student and staff satisfaction with online learning; the continuity of teaching and assessment during crises; and disparities in digital access between urban, rural and disadvantaged student populations. Digitalization can improve access, blended learning and student services but this depends on the right infrastructure, staff development and institutional support. Performance evaluation should therefore integrate digital readiness, digital equity and organisational resilience rather than focusing exclusively on technological adoption.

The pandemic also showed that digital transformation can reproduce or worsen existing socio-economic inequalities. Even when online courses are offered formally, students without a stable internet connection, the right equipment or adequate study conditions may be at a disadvantage (Goudeau et al., 2021). Digital-equity indicators should consequently be incorporated into institutional performance frameworks.

The pandemic experience further suggests that institutional resilience should be evaluated through both technological and organisational indicators. The continuity of teaching depends not only on the digital infrastructure, but also on the ability of institutions to adapt teaching

practices, support staff and students, and maintain communication during disruption (Crawford et al. 2020).

Table 6 summarizes the main trends identified in the literature on digitalization, online learning and institutional resilience in higher education.

Table 6 – Universal consequences of emergency digital transformation during the COVID-19 pandemic

Trend	Description	Reference
Inequitable preparedness for digital pedagogical implementation	Higher-education systems appear to have exhibited varied preparedness for emergency digital transformation; variations in digital infrastructure, pedagogical methodologies, and financial allocation may have influenced the success of the implementation.	(Bates, 2015)
Divergent preferences concerning prospective instructional modalities	Generation Z students may have predominantly preferred online learning and evaluation, whereas faculty often indicated a preference for a return to traditional in-person instruction.	(Graham et al., 2019)
Antecedent investments facilitating a more seamless transition	Nations with established antecedent investments in Massive Open Online Courses and educational technologies (e.g., Norway, New York) may have been better positioned for the transition to emergency online instruction.	(Selwyn, 2022)
Disparities in digital competency and institutional support mechanisms	The transition appears to have underscored discrepancies in digital competency among academic stakeholders, suggesting a necessity for the implementation of robust support frameworks.	(Koehler & Mishra, 2009)
Socio-economic inequities in digital resource accessibility	Developing nations and socio-economically marginalized cohorts may have encountered more pronounced impediments regarding connectivity and device acquisition, potentially exacerbating existing inequities.	(Hargittai, 2008)

Source: Compiled by authors

4.12 Pan-African quality assurance initiatives

Beyond national reforms, continental initiatives structure the evaluation of performance in African higher education by seeking to harmonize standards while respecting the diversity of national systems. The bedrock of this convergence is the African Standards and Guidelines for Quality Assurance in Higher Education (ASG-QA), developed within the framework of the Harmonization of African Higher Education Quality Assurance and Accreditation (HAQAA) initiative and approved by the African Union (African Union Commission, 2018). The ASG-QAs facilitate the harmonization of quality assurance practices through the promotion of compatible methodologies. The guidelines are designed to be adaptable to different national circumstances, but also to provide a common framework for internal and external quality assurance.

These guidelines offer a basis for the national agencies for the promotion of a more coherent academic governance and the mutual recognition of qualifications. If the ASG-QA provide practical frameworks for the implementation of standards, their non-binding nature acknowledges the need for institutional flexibility (African Union Commission, 2018). As regional standards, they add to existing tools to define quality assurance systems in Africa, while promoting regional collaboration and mobility by strengthening shared standards (Materu, 2007; African Union Commission, 2018).

For Morocco, conformity with the ASG-QA facilitates the harmonization of national quality assurance efforts with continental standards, thus facilitating international recognition of Moroccan diplomas. The incorporation of ESG-DQ criteria into the accreditation processes of the PACTE ESRI 2030 program could shift the nature of quality assurance by ANEAQ from an administrative compliance mechanism to a strategic tool for institutional performance. The result of a participatory process involving experts from different parts of Africa and Europe, this framework is now a reference point to establish a common language of quality assurance in African higher education (African Union Commission, 2018).

Table 7– Key features of the African Standards and Guidelines for Quality Assurance in Higher Education (ASG-QA)

Feature	Description	Reference
Pan-African framework	The framework was developed under the Pan-African Quality Assurance and Accreditation Framework, which may facilitate the harmonization of quality assurance systems across the continent.	(African Union Commission, 2016)
Inclusive development process	Standards appear to be derived from an exhaustive mapping of existing national and regional criteria, as well as stakeholder consultations facilitated by the Harmonisation of African Higher Education Quality Assurance and Accreditation (HAQAA) Initiative.	(HAQAA Initiative, 2018)
General yet context-sensitive	The framework offers a unified foundational structure that may accommodate diverse national contexts, while ensuring accessibility through multilingual availability.	(African Union Commission, 2018)
Enhancement-led and non-prescriptive	These standards and guidelines appear to prioritize institutional improvement and flexibility, rather than adherence to rigid compliance protocols.	(Newton, 2002) (Williams, 2016)
Supports internal and external QA	It offers guidance for institutions and quality assurance agencies at varying stages of development, which may promote greater comparability.	(UNESCO Regional Office for Southern Africa, 2025)
Facilitates regional cooperation	It encourages alignment with continental standards, which could facilitate mutual recognition and enhanced mobility across African higher-education systems.	(HAQAA Initiative, 2021)

Source: Compiled by authors

4.13 The National Qualifications Framework and skills recognition in Morocco

In Morocco quality assurance reforms are being implemented alongside the drive for a National Qualifications Framework (NQF) in an attempt to harmonize qualifications and allow for recognition of skills across the various education and training sub-systems. While the identification of key components specifically the recognition of prior learning and the establishment of credit accumulation and transfer systems constitutes a positive step, systematic implementation remains a challenge requiring clear legislative parameters.

The legal basis of the NQF is the 2019 Framework Law No. 51-17 on the education, training and scientific research system, which defines the purpose and governance structure of the NQF (Kingdom of Morocco, 2019). This law's Article 35 establishes a national scheme for certification and validation that sets the criteria for ranking qualifications and recognizing the educational and professional achievements of learners (UNESCO, 2023). The NQF is overseen by an independent national body that comprises representatives from various sectors of education and professional bodies and seeks to foster coherence, flexibility of learning pathways and enhanced mobility (African Continental Qualifications Framework, 2020). This institutional change is in line with national strategies to adapt the training offer to the emerging needs of the labor market, particularly in sectors such as renewable energies where the alignment of competencies to the demand for employment is a structural priority (Boulartal, 2026).

The integration of the NQF into performance evaluation frameworks provides significant advantages by means of a common language to describe qualifications which will increase comparability and transparency. Effective implementation is measured through key indicators such as alignment of programs to NQF levels, volume of registered qualifications, adoption of recognition of prior learning and stakeholder engagement in governance. Furthermore, the NQF enhances employability by ensuring that the credentials are transparent and responsive to the needs of the labor market. The alignment of curricula with the NQF can help to meet the skill shortages in Moroccan universities and ultimately improve graduates' mobility. This means

capacity building, legislative clarity and better co-ordination between ministries, universities, vocational training providers and employers. To ensure the supply of skills responds to the dynamic demands of the labor market, a data-driven approach with rigorous analysis of skills needs in strategic sectors should be used (Boulartal, 2026).

Table 8 – Key features of Morocco’s National Qualifications Framework

Feature	Description	Reference
Long gestation and policy development	The National Qualifications Framework (NQF) appears to have undergone deliberation for over a decade; a concept paper was renewed in 2019, while the reference document issued in 2013 underwent subsequent revision in 2015.	(Kingdom of Morocco, 2019)
Legal recognition and governance	Framework Law No. 51-17 appears to establish the NQF and may delineate governance through an independent national authority and a National Commission.	(Kingdom of Morocco, 2019)
Objectives	The framework potentially establishes national certification and validation rules, fosters coherence across subsystems, recognises prior learning, and supports credit accumulation and transfer.	(UNESCO et al., 2023)
Implementation challenges	The apparent absence of specific legislation defining parameters and characteristics persists; there remains a potential requirement for the development of recognition of prior learning and credit transfer systems.	(Chakroun, 2010)
Stakeholder involvement	Governance structures appear to incorporate representatives from education sectors and professional bodies, which may serve to ensure relevance and coordination.	(OECD, 2024)

Source: Compiled by authors

4.14 Roadmap for European cooperation and quality assurance

Collaborative projects with European partners have provided a major boost to Morocco’s quality assurance (QA) reforms. In the past two decades, Morocco has made substantial efforts to modernize its higher education system and enhance institutional performance (Organisation for Economic Co-operation and Development [OECD], 2019). Cooperation with the European Union has been progressing steadily, providing technical support in establishing national QA frameworks, but the system has challenges to fully operationalize these mechanisms to achieve targeted performance levels (African Union Commission, 2018). The EQuAM-M project (Enhancing Quality Assurance Management in Morocco) has been a key factor to develop the conditions for alignment with international methodological standards.

The present roadmap provides for a number of actions to operationalize QA. A governance reform action plan includes the implementation of a national QA strategy, strengthening of organizational structures and the enhancement of partnerships at local, regional and international levels. These institutional dynamics, based on the strategic orientations of Framework Law 51-17, require the establishment of strong performance monitoring mechanisms to ensure the sustainability of evaluations and the optimization of budgetary efficiency within the university system (Kingdom of Morocco, 2019). The key measures are outlined in table eight and demonstrate the significance of capacity building, legislative reform, stakeholder engagement and international cooperation. In addition to these structural measures, it is imperative to integrate digital governance frameworks, ensuring that the digitalization of educational management and learning assessment aligns with the strategic objectives of the PACTE ESRI 2030 (Fifani, 2024).

4.15 Balanced scorecard frameworks in higher education

Higher education institutions’ performance management systems have been based increasingly on strategic management approaches to align institutional mission with operational outcomes (Cullen, J et al., 2003). The Balanced Scorecard (BSC) has become popular as an effective framework that offers a systematic approach to align the activities of an organization with the

strategy of an institution and measure performance across multiple dimensions (Pietrzak, 2021). The BSC, originally designed for the private sector, converts the mission of an organization into a series of objectives that are organized into interrelated perspectives: financial, stakeholder, internal processes and learning and growth. Universities increasingly operate in complex environments characterized by constrained public funding and growing demands for accountability, making the adoption of such structured performance tools essential (Kiriri, 2022).

The higher education area's financial perspective involves fiscal sustainability and optimization of resource allocation. The stakeholder approach uses indicators such as graduate employability and community impact to measure the complex engagement with students, employers and society. The internal process perspective focuses on academic quality, accreditation and research productivity, whereas the learning and growth lens looks at the capacity of the institution to innovate through professional development and digital infrastructure (Pietrzak, 2021).

Table 9 – Balanced scorecard perspectives and example indicators

Perspective	Illustrative performance indicators	Theoretical framework
Financial sustainability	Government funding per student, revenue from research contracts and donations, cost recovery ratios, investment in infrastructure	(Kaplan & Norton, 1992, 1996) (OECD, 2024)
Stakeholder and community	Student satisfaction surveys, graduate employment rates, employer feedback, community engagement activities and alumni participation	(Douglas et al., 2008) (Harvey, 2001; Yorke, 2006)
Internal processes	Curriculum renewal cycles, accreditation status, research output per faculty member, efficiency of administrative procedures, adoption of quality assurance standards	(Al-Hosaini & Sofian, 2015) (Cullen et al., 2003) (Harvey & Green, 1993)
Learning and growth	Quantification of faculty training duration, professional development participation, investment in digital learning resources, innovation grants awarded	(Kaplan & Norton, 1996) (Boyce, 2004) (Kirkpatrick & Kirkpatrick, 2006)

Source: Compiled by authors

The use of BSC in universities seems to generate sophisticated benefits. Universities should consider the intangible resources, such as intellectual capital and involvement of stakeholders, as well as financial measures. But it is important to adapt private-sector ideas to public institutions with a careful eye to the public-good mission. When properly tailored, this approach encourages knowledge sharing and inter-institutional collaboration which is important to overcoming informational silos (Pietrzak, 2021). Table nine shows the main points of view of the BSC and examples of indicators that are relevant to Moroccan universities. These indicators need to be strongly validated to ensure that they are in tune with the objectives of the ESRI PACTE 2030 and that there is faculty buy-in while undergoing organizational change.

4.16 Use of Data Envelopment Analysis in Higher Education

Data Envelopment Analysis (DEA) is a non-parametric method designed to estimate the efficiency of decision-making units (DMUs) by constructing an empirical efficiency frontier using observed input-output data (Charnes et al., 1978). DEA does not define a prior functional form (as parametric approaches do) and allows flexible modeling of multidimensional inputs (academic personnel, fiscal allocations, infrastructure) and outputs (graduates and research productivity) (Cooper et al., 2011). Efficiency is determined by the relative distance of an institution to the constructed frontier, which can be modelled under assumptions of constant or variable returns to scale (Johnes, 2006).

The use of DEA in higher education for research purposes has increased considerably, as institutions look for rigorous benchmarking performance frameworks (Johnes, 2006). The basic DEA models remain the most popular, yet more sophisticated models such as network DEA

and super-efficiency models are gaining popularity as they are capable of dealing with more complex internal processes and hierarchical structures (Cooper et al., 2011). Despite this growth, empirical research remains geographically concentrated in developed systems; its application in emerging contexts, such as the Moroccan system, offers substantive insights for evidence-based resource allocation and policy interventions (Johnes, 2006).

DEA is a strict quantitative tool that can be used to determine efficiency benchmarks of the Moroccan universities. The results should however be interpreted in context since efficiency metrics are relative to the sample and should be augmented with qualitative data on local institutional challenges such as language policies, governance structures and societal impact. One way is to use DEA together with strategic management frameworks, like the Balanced Scorecard (Kaplan & Norton, 1996). While DEA provides a robust quantitative measurement of how resources are converted into academic results, the Balanced Scorecard ensures that these performance metrics align with strategic priorities and stakeholder expectations, thereby overcoming the inherent limitations of purely quantitative evaluation (Kaplan & Norton, 1996).

Table 10 – Common Data Envelopment Analysis models used in higher education

DEA model	Description	Occurrence in review	Reference
Classic DEA (CRS/VRS)	Conventional models appear to assume constant or variable returns to scale; they facilitate technical efficiency assessment through the comparison of weighted outputs to weighted inputs.	Usage appears most frequent	(Charnes et al., 1978) ; (Banker et al., 1984)
Super-efficiency	Extends the classic model to allow efficiency scores greater than 1 by removing the evaluated unit from the reference set; useful for ranking efficient units	Application appears less frequent	(Andersen & Petersen, 1993)
Network DEA	This framework incorporates intermediate products and internal structures within a decision-making unit; it facilitates the evaluation of multi-stage processes, such as teaching, research, and the third mission.	Application appears rare	(Tone & Tsutsui, 2009)
Slack-based model (SBM)	Measures efficiency by directly accounting for input and output slacks; handles non-radial inefficiencies	Occurrence appears rare	(Tone, 2001)
Inverse DEA / Directional distance functions	Models variations in inputs or outputs while maintaining efficiency; used for scenario analysis	Identified cases appear limited	(Chambers et al., 1996)

Source: Compiled by authors

4.17 Assessment for Learning and Digital Transformation in Moroccan Higher Education

Assessment practices have a decisive influence on student learning and on pedagogical design. Assessment literacy is the capacity of educators to effectively design, interpret, and use assessment data, for the purpose of ensuring validity, reliability, and fairness. The strengthening of this capacity is a strategic lever within the Moroccan higher education system to meet the quality assurance standards set by the Agence Nationale d'Évaluation et d'Assurance Qualité (ANEAQ) and the strategic objectives of the PACTE ESRI 2030. Teachers should move away from traditional summative measures and embrace formative assessment, the process of eliciting, interpreting and responding to feedback from students, to support their learning. Institutions must support us in moving away from high stakes testing to authentic, varied assessment strategies that promote student self-regulation and ongoing engagement. Quality enhancement is based on pedagogical alignment between intended learning outcomes and assessment methods and requires professional development that includes formative feedback processes as a standard practice in public institutions.

The COVID-19 pandemic has accelerated the move to remote teaching and exposed structural weaknesses in digital infrastructure and teaching preparedness. This period of “emergency remote teaching” rather than optimized online learning showed a significant digital divide,

especially regarding equitable access for students in marginalized or rural areas (Bond et al., 2021).

The challenge is not continuity anymore but building long-term digital resilience, post pandemic. The PACTE ESRI 2030 plan aims to do this by giving priority to the modernization of technological infrastructures and to the systematic improvement of the digital skills of faculty staff. In order for e-learning to transcend the status of a simple adjunct to traditional pedagogy, it is required for institutions to adopt an integrated approach that combines flexibility with instructional quality. Such a transformation requires sustained investment in digital ecosystems, and a commitment to integrating the pedagogical practices that keep students engaged, ensuring that digital equity and academic resilience are at the heart of national reform.

Table 11 – Implementation of ISTE essential conditions in Moroccan higher education

International Society for Technology in Education (ISTE) condition	Moroccan educational context following the COVID-19 pandemic	Reference
Shared vision	The rapid adoption of remote learning platforms appears to have prioritized operational continuity over pedagogical quality; current national standards, which limit online instruction to 30 percent of content, suggest that distance education may necessitate greater inclusion within long-term strategic frameworks.	(World Bank, 2020); (El Ansari, 2023)
Implementation planning	While universities adopted the Modular Object-Oriented Dynamic Learning Environment (Moodle) and various digital tools via public-private partnerships, the observed focus on hardware and software infrastructure suggests that human resource development may have been relatively neglected.	(Babou, 2022)
Equitable access	Given that students lacking internet access were frequently restricted to television and radio, the prevalence of poor connectivity and obsolete hardware suggests that, despite the government distribution of subscriber identity module (SIM) cards, a persistent digital divide remains.	(Outoukarte, 2023)
Prepared educators	Lecturers exhibited heterogeneous levels of digital competence; the reported lack of formal training in distance education suggests that continuous professional development may be necessary to enhance instructional efficacy.	(Chahid, 2025)
Technical support	Technical support services appeared to be both limited and underutilized, as the infrequent employment of institutional email channels suggests that existing support units might require comprehensive structural enhancement.	(El Ansari, 2023)
High-quality learning activities and content	Although digital resources were generated via national tenders, the intensive time commitment required for online course design suggests that academic staff may not have been sufficiently incentivized, necessitating a comprehensive curricular redesign.	(Babou, 2022)
Ongoing evaluation	The limited monitoring of remote learning effectiveness, compounded by the absence of systematic evaluation frameworks, suggests that the provision of psychological support for students and staff may have been fundamentally insufficient.	(Outoukarte, 2023)

Source: Compiled by authors

The results indicate that the digital transformation of higher education in Morocco is a continuous and iterative process. “There is a need to address infrastructure gaps, integrate e-learning in national strategies and provide sustained support to teachers and students to build institutional resilience. Policymakers can add digitalization indicators into performance evaluation systems, so as to monitor progress and formulate specific measures. Furthermore, institutions should move beyond emergency responses toward a comprehensive digital-readiness model in which infrastructure, professional development, and working environments are aligned to sustain high-quality pedagogical outcomes (Babou, 2022). While equity, inclusion, and community engagement have received limited attention in global performance measurement models, recent empirical contributions demonstrate a growing domestic interest.

Specifically, Slimani and Abakouy (2023) explored how Moroccan universities contribute to environmental protection and territorial competitiveness. However, our systematic review extends beyond their localized inquiry by providing a comprehensive meta-synthesis that integrates equity, multilingual instruction, and governance metrics into a standardized indicator architecture aligned with ANEAQ standards and PACTE ESRI 2030 priorities.

Table 12– Summary of key measures in the Moroccan quality-assurance roadmap

Measure	Description	Reference
Awareness and cultural change	The organisation of awareness campaigns, seminars, and workshops may serve to disseminate a culture of quality assurance and evaluation.	(Harvey & Stensaker, 2008)
Capacity building	The strengthening of human resources at the ANEAQ, universities, and the Ministry, alongside the provision of training, could facilitate the development of qualified evaluators.	(EUA, 2006) ; (Loukkola & Zhang, 2010)
Legal and regulatory reform	The adoption and publication of evaluation and quality-assurance standards, as well as the revision of legal texts governing higher education, may enhance regulatory clarity.	(UNESCO, 2023)
Standards and requirements	Define common requirements for external and internal quality assurance to ensure continuity and coherence	(ENQA, 2015)
Institutional self-assessment	Institutionalise self-assessment operations for courses and institutions to promote internal quality assurance	(EUA, 2006 ; Harvey, 2005)
Evaluation procedures	Develop internal and external evaluation procedures and revitalise quality-assurance structures	(Vlăsceanu et al., 2004)
Networking and cooperation	Create a network of quality-assurance focal points and develop partnerships at national and international levels	(African Union, 2018)
Governance and information systems	Implement a national strategy for quality assurance, operationalise organisational charts and develop integrated information systems	(African Union, 2018) ; (UNESCO, 2023)
Resource provision	Ensure quality-assurance structures have sufficient human, material and financial resources and provide continuous training	(EUA, 2006)

Source: Compiled by authors

5 Discussion

5.1 Implications of the literature for evaluating Moroccan public universities

When reflecting upon the previous domestic literature, it is necessary to define the main contribution of this research from the point of view of its scientific positioning. The previous empirical contributions, particularly Slimani and Abakouy (2023), pioneered the study of the role of universities in environmental protection and localized territorial competitiveness but remained limited to a single case study. The present review goes far beyond such localized empirical inquiries in that it presents a comprehensive meta-synthesis of 94 included studies from across disciplines. Rather than simply tracking the presence or absence of research topics, this research develops an integrated and multi-dimensional indicator system that systematically links indicators of equity, multilingual education, and governance to national accreditation standards (ANEAQ) and the mandates of Framework Law 51-17. Thus, this article addresses a broader, unfulfilled gap: bridging isolated empirical findings with an integrated policy-steering framework for the entire Moroccan public university system.

The review also suggests some implications to the assessment of Moroccan higher education institutions in terms of their public universities. To begin with, assessment systems should be multidimensional in nature, acknowledging the fact that the performance of universities includes teaching and learning, research and innovation, community involvement, governance, financial health, equity, digitalisation and internationalisation (Dill, 2013). A direct concentration on research statistics or student population may lead to the potential disregard of the overall purpose of state universities. The approaches of the balanced scorecard appears to demonstrate the importance of combining several approaches, harmonizing the activities of the

institution with the strategic objectives and meeting the expectations of stakeholders (Kaplan & Norton, 1996). In the case of Morocco where universities undergo pressure to modernise its curricula to improve employability and development of the community built, a holistic approach appears necessary.

Second, the indicators may necessitate contextualization to represent the socio cultural and linguistic diversity in Morocco. The metrics of pedagogical efficacy may, for instance, be evaluated in relation to the language of instruction, the language proficiency of students and availability of learning resources of Arabic, French, and English (García, 2009). Research indicators are expected to take into consideration publications written in French and Arabic and be aware of locally relevant research which might not be found in international indices. Local community measures of engagement must be adjusted to the priorities of local communities and must entail participatory approaches (Boyer, 1996; Furco, 1996). The equity indicators are expected to reflect regional differences and gender-based participation. Governance indicators may be aligned with national systems of regulations and the level of institutional autonomy (Enders et al., 2013). Without contextualization, evaluation frameworks have the risk to distort performance, possibly to a misalignment with societal requirements.

Third, there are measurement issues (validity, comparability, and data availability) that deserve serious attention. The operationalization of intended constructs requires accurate tools to guaranty an accurate representation and to reduce possible biases or strategic manipulation. For instance, rather than relying exclusively on student evaluations, pedagogical quality may be assessed through multidimensional indicators, such as peer reviews, student feedback, and graduate outcomes. The measures of research can prioritize national or regional effect and international citation. Comparability is based on the need to bring the institutions of similar missions and contexts together so that benchmarking of institutions can be fair (Johnes, 2006). The enhancement of data infrastructure is essential; the investments in institutional information systems and databases on education in the country would help carry out strong evaluation. Data collection and data analysis capacity building is also required. In this regard, aligning these indicators with the ANEAQ frameworks remains a prerequisite for ensuring rigorous quality standardization within the Moroccan academic landscape. This recommendation would nevertheless benefit from being illustrated by recent local studies, such as the work of Boussof et al., which proposes concrete indicators on publication cost management and contract funding in Morocco.

Fourth, extant literature suggests that performance evaluation should transcend mere accountability to encompass the promotion of institutional learning and continuous improvement. The models of institutional effectiveness focus on the process of continuous improvement, with the outcomes of the assessment process supporting strategic planning and resource allocation. These models could assist Moroccan universities in identifying institutional strengths and deficits, facilitating targeted interventions, and monitoring progress. The national policy frameworks ought to promote formative assessment and assistance in capacity building instead of punitive ranking. Relevance and ownership can be increased through participatory strategies that involve faculty, students and community stakeholders.

5.2 Contextualisation of international indicators to Moroccan socio-cultural and regulatory realities

There are serious problems of construct validity in the use of global performance indicators in developing countries. Studies on higher education in the Global South have shown that international ranking systems and global assessment metrics (e.g., QS or THE) do not constitute good indicators of working conditions of Southern institutions, mainly because they are based on standards of elite excellence that cannot be achieved locally or are of little interest (e.g., number of Nobel Prizes). Latin America seeks to substitute the standardized indicators for

regional ones that acknowledge national research groups, technological advances (patents), diversification of revenues and continuing education actions (Hernandez-Diaz et al., 2021). A theoretical standpoint for the public universities of Morocco is to substitute the general universal indicators with a metrics system adapted to the Moroccan context: measuring trilingual academic performance (Arabic, French, English), analyzing graduate employability and PACTE ESRI 2030 regional influence, and equitable access for rural populations. The nine internationalisation criteria offered in the mapping study ; such as international research partnerships, double or joint degrees and internationalised curricula can be extended to focus on partnership with the African and Mediterranean institutions. The indicators of digitalisation could focus on gaining accessibility of e-learning in rural settings and the incorporation of Arabic-language digital resources. The equity indicators ought to consider the socio-economic differences and focus on assisting first-generation students in universities.

Language policy constitutes a fundamental contextual determinant. Teaching quality indicators may elucidate the efficacy of language-of-instruction mandates. As an illustration, the percentage of courses delivered in Arabic, French and English can be used to give an idea of the policy implementation process. The assessment of student language proficiency would be used to make informed decisions on curriculum design and remedial support. The indicators of research must include a number of publications in languages other than English and must promote the idea of bilingual or multi-lingual publication methods. Among the governance indicators could be the stakeholder participation in language-policy decision-making and access to language resources. The inherent multilingualism of the Moroccan context necessitates rigorous consideration during the translation and interpretation of data collection instruments to mitigate potential bias.

Indicator design appears contingent upon the prevailing regulatory environment and the degree of institutional autonomy. Where the universities do not have extensive autonomy, the indicators must be based on adherence to national priorities and the efficiency of central policies. On the other hand, autonomy can be used to measure institutional innovation and strategic differentiation using indicators as the measure. Morocco's ongoing reform initiatives concerning institutional autonomy and the Licence-Master-Doctorat (LMD) system point to the necessity of indicators of curriculum innovation, industry alliances and interdisciplinary course work . The funding indicators ought to focus on the equilibrium between the state funding and the research, tuition and personal income. The financial sustainability plans shall consider the limit to tuition fees and government funding conventions. In this regard, the integration of the ESRI 2030 PACT framework is essential to anchor these autonomy mechanisms in a structuring vision, aiming to directly correlate academic performance with territorial innovation and the achievement of regional Sustainable Development Goals, as highlighted by Slimani and Abakouy.

Socio-cultural aspects of gender norms, rural-urban differences and expectations of community-driven performance need to be duly considered. Strategies could include equity metrics for female enrollment and retention, particularly in science, technology, engineering and mathematics (STEM) curricula, while keeping a check on university access for rural students. Community engagement metrics can serve as proxies for institutional cooperation with local government organizations, non-governmental organizations, and commercial organizations in addressing local development needs. In areas where social values determine the number of people attending higher education, qualitative measures might be required where the social impact of universities is required. In this sense, community engagement cannot be seen as an unexplored field.

The proposed development of a quality-assurance system in Morocco suggests that contextual adaptation requires a participatory process, implying that a substantive cultural transformation (Noui, 2020) is necessary. However, this systemic overhaul now requires rigorous convergence

with the standards of ANEAQ, whose evaluation mechanisms must serve as a normative basis for any new institutional strategy.

The operational assessment of the institutional evaluation framework currently applied by the National Agency for Evaluation and Quality Assurance (ANEAQ) shows that the existing standards are largely focused on formal academic quality assurance, compliance with institutional governance, and input/output ratios (e.g. student-staff ratios, accreditation of degree programs and administrative procedures). However, while this legal framework guarantees a relative academic standardization of public universities, an analysis of its evaluation grids reveals a certain omission of emergent transversal dimensions. In particular, the current ANEAQ protocols do not operationalize Key Performance Indicators (KPIs) to evaluate: (1) social and territorial equity (e.g., rural populations' access, socioeconomic mobility, and gender parity in STEM); (2) digital transformation maturity (beyond technological infrastructure to pedagogical online literacy and adaptive learning analytics); and (3) environmental sustainability and 'Third Mission' societal impact (e.g., as required by the PACTE ESRI 2030 reform). Therefore, the contextualized framework proposed in this study (Section 5.4) does not seek to supplant ANEAQ standards, but rather to function as an operational extension upgrading ANEAQ's evaluative grids from static compliance audits to dynamic, impact-driven institutional steering tools.

5.3 Implications for governance, accountability and institutional strategy

To ensure that the practical implications have direct empirical foundations, the governance recommendations elicited in this section explicitly relate to the core findings of our bibliometric and thematic synthesis. The literature review, first of all, evidenced a historical over-dependence on quantitative models of operational efficiency (e.g. Data Envelopment Analysis, which accounts for 28.5% of the bibliometric corpus) and, at the same time, a critical deficit of qualitative metrics of social impact and territorial engagement. Therefore, university governance must evolve from being just an administrative compliance to a balanced evaluation architecture. Second, the bibliometric mapping showed that domestic Moroccan contributions represent less than 2% of the global indexed scholarship on university performance, revealing a structural fragmentation in national reporting. In an effort to address these gaps in empirical evidence, governance frameworks must define contractual performance agreements between the Ministry (MESRSI) and public universities by directly operationalizing the strategic priorities of the PACTE ESRI 2030 reform.

The introduction of performance evaluation frameworks has a significant impact on governance arrangements, accountability mechanisms and institutional strategy. Having clear participatory governance structures allows for strong evaluation methods and can help build institutional trust. The systematic inclusion of faculty, student, industry, and community organization representatives in management boards and executive teams appears imperative for the establishment of comprehensive governance. Areas of governance may encompass diversity in the board, openness of the decision-making process, the regularity of strategic-plan reviews and the use of digital governance tools (Bond et al., 2021). Ensuring the integrity of data and compliance with standards can be achieved through greater internal audit and quality-assurance functions. On a national scale another measure that could be taken is the creation of a separate quality-assurance agency that would have the representation of the universities and civil society to control evaluation frameworks and offer capacity building. Rather than initiating a new structure, this mission would gain in efficiency by integrating within ANEAQ to harmonize quality standards with the imperatives of proximity and territorial innovation promoted by the ESRI 2030 PACT.

The exercise of institutional responsibility should remain measured, whilst concurrently safeguarding the preservation of essential autonomy. Performance assessment frameworks

could ostensibly assist universities in demonstrating alignment with national objectives without constraining intellectual inquiry or institutional creativity. Performance related funding mechanisms can be a catalyst for institutional improvement but they can also lead to homogenization and the possible abandonment of activities that are not immediately quantifiable. The existing literature indicates some level of caution in the use of ranking systems as a punitive measure and recommends the development of national ranking systems aligned with local priorities (Hazelkorn, 2015). In Morocco, accountability systems may consist of contractual agreements between the universities and the Ministry of Higher Education specifying what is expected and what resources and freedom they have to get there. This contractual approach is beneficial since it incorporates empirical indicator frameworks such as those developed by Drissi et al. for Hassan Premier University, which facilitates the alignment of institutional efforts with the Sustainable Development Goals and encourages cooperation between academic and territorial actors (Wardat & AlAli, 2025). Additionally, in line with the ESRI 2030 Pact, these performance contracts should foster stakeholder trust through greater transparency and strong data management (Cullen et al., 2003).

Evaluation findings must serve to inform institutional strategy; specifically, balanced scorecard and institutional effectiveness models may provide the necessary mechanisms for the alignment of strategic objectives with performance metrics, thereby ensuring that evaluation processes facilitate rigorous strategic decision-making. Universities can create strategic frameworks, with clear objectives for teaching, research, outreach, digitalization and internationalization, together with the setting of measurable performance indicators. Ongoing monitoring of the indicators would allow for mid-course corrections and strategic reallocation of resources. Moreover, engaging stakeholders such as employers, alumni, and community leaders can help ensure that institutional strategies are responsive to societal needs. Finally, the cultivation of strategic alliances with industry and international institutions may strengthen research and innovation outcomes while expanding opportunities for students and staff.

5.4 Proposed contextualised indicator framework for Morocco

On the basis of the review findings, the implementation of a contextualized indication structure for public universities in Morocco appears warranted. While the framework maintains the eight foundational performance domains, the integration of indicators may necessitate an adaptation to the distinct socioeconomic realities of the Moroccan context. Regarding instruction and learning, pertinent indicators may encompass: the percentage of courses delivered in Arabic, French, and English; student satisfaction with language-support services; the compliance of the curriculum with labor-market demands; graduate employment rates; and student-staff ratios by major. Research and innovation indicators include the number of publications on English and French and Arabic; research funding by the national and regional sources; patents and findings on the solutions to the challenges in Morocco; doctoral graduations; and collaborations with Moroccan industry and African universities. The indicators of community engagement are used to gauge the service-learning courses, community-based research projects, outreach programmes in rural settings, joint initiatives with local government and feedback on community partners. Governance and management indicators include board composition, decision making transparency, strategic plans implementation, the use of digital governance tools and involvement of stakeholders in decision-making. The indicators to financial sustainability are government funding per student, research contract and entrepreneurship revenue, cost recovery ratios and investment in infrastructure. The indicators of equity and inclusion monitor the enrolment and graduation of rural students, women and students with disabilities; access to scholarships and support services; and retention on under-represented students. The indicators of digitalisation evaluate the rate of online course delivery, access to computing devices and the internet by the students, learning management systems, digital

literacy training and cybersecurity. The indicators of internationalisation track the trend in number of international partnerships, mobility programmes, joint degree programs, international research collaboration and international student/staff ratio. This indicator architecture must be rigorously articulated with the ANEAQ standards, thus ensuring that each performance measure meets the applicable accreditation and quality monitoring standards.

The proposed framework appears to encompass diverse quantitative and qualitative measures. To involve the community and achieve equity, numerical indicators are supplemented by the use of participatory assessments and case studies. In the case of digitalisation and internationalisation, infrastructure indicators and outcome indicators (e.g. student satisfaction with online learning, success of joint degree programmes) are also involved. Periodic review and stakeholder consultation are emphasized within the framework to help ensure continued relevance and feasibility. Such a structure would necessitate investments in data systems, training as well as institutional culture change. The indicators might be fine-tuned by piloting the tests in a few selected universities and indicate feasibility.

5.5 Methodological recommendations for future studies

Methodological advancements in the assessment of Moroccan higher education institutions may necessitate the implementation of several strategic recommendations. Mixed-method designs which integrate quantitative indicators and qualitative insights should be implemented by the researchers. For instance, integrating interviews and focus groups involving students, faculty, and community partners with administrative datasets may elicit more comprehensive perceptions and experiences. The relevance and buy-in could be improved by participatory methods where stakeholders are included in the selection and evaluation of the indicators and the longitudinal studies would help to determine the effects of reforms with time and to determine the cause-effect relationships. Comparative analyses across universities or regions could elucidate best practices and the situational elements influencing institutional performance. Bibliometrics techniques may be extended to French and Arabic databases, maybe through creation of regional citation databases or abstract translation. Predictive analytics pertaining to student success and resource allocation might be supported by advanced statistical and machine-learning models, provided that ethical concerns and data privacy requirements are addressed.

The implementation of capacity-building initiatives appears essential. It is recommended that the Ministry of Higher Education and Universities direct resources toward the professional training of staff in data collection, analysis, and interpretation, thereby fostering organizational efficacy. The facilitation of evidence-based decision-making could be achieved through the implementation of intuitive dashboards and sophisticated analytic tools. Engagement in collaboration with international research centers, alongside participation in global research networks, may engender methodological advancement and facilitate the dissemination of knowledge. Finally, the interrogation of relationships between performance domains such as the role of governance in research productivity or the impact of digitalization on equity could yield comprehensive performance models for higher education institutions. This transition towards formative assessment seems to align strategically with the objectives of the ESRI 2030 PACT, thereby strengthening the ability of institutions to manage their organizational transformation in a sustainable way.

5.6 Limitations of this review

There are some inherent limitations of the present review that should be pointed out to scholars. The search was limited to studies published in English or French and may have missed relevant studies published in Arabic or Spanish. Due to resource constraints, the database coverage was restricted to Scopus, the Web of Science and a selection of open-access repositories. The review

is based mainly on publicly available literature, which may restrict the completeness of the findings, as unpublished reports and internal evaluations were not included. Quality assessment was qualitative and may not have captured subtle variations in methodological rigor. The synthesis relies on a number of Moroccan studies and therefore, some findings are inferred from similar contexts. Notwithstanding these limitations, the review offers an in-depth synthesis of existing literature and suggests a contextualized framework for performance evaluation in Moroccan public universities. Moreover, the present analysis shows the scarcity of local empirical studies, limiting the possibility to absorb the strategic directions of the ESRI PACT 2030 or specific case studies such as those conducted by Drissi et al. in the Moroccan context. The results presented here should therefore be taken with a grain of salt as the databases used still contain an Anglophone bias that often hides the specificities of national governance frameworks (Brück et al., 2023). Additionally, the lack of primary institutional data prevents us from validating our recommendations to the fullest, so future empirical studies are needed to fill this gap (Gutović et al., 2026).

6 Conclusion

In accordance with the analytical scope established in Section 1.5, the core synthesis of this systematic and bibliometric review directly resolves the five guiding research questions: Addressing ;

RQ1 (Conceptual Traditions): The scholarship demonstrates a structural evolution in university performance evaluation, shifting from rigid New Public Management (NPM) efficiency paradigms dominated by quantitative input/output ratios towards public-value and academic-mission frameworks that integrate qualitative governance, civic engagement, and social equity metrics .

RQ2 (Performance Domains and Operationalization) Addressing The literature operationalizes university performance in eight interrelated domains: Teaching & Learning, Research & Innovation, Community Engagement, Governance & Management, Financial Sustainability, Equity & Inclusion, Digital Transformation and Internationalization . Addressing .

RQ3 (Measurement & Validity Issues): Methodological review indicates ongoing trade-offs between global comparability and local validity. International ranking metrics alone lead to serious citation biases against non-English scholarship, induce mission drift, and fail to capture non-market societal contributions.

RQ4 (Moroccan Contextual Dynamics): The Moroccan context is characterized by particular sociolinguistic realities (multilingual instruction in Arabic, French, and English), structural skills mismatches, and stark regional resource disparities, all contributing to the dynamics of performance evaluation in Moroccan public universities. The effectiveness of evaluation is conditioned by the alignment of the indicator frameworks with Framework Law 51-17, ANEAQ quality assurance standards and PACTE ESRI 2030 strategic priorities.

RQ5 (Future Directions, Methodological Innovations) To advance university evaluation in Morocco, it is key to embrace mixed-method audit designs, learning analytics, micro-credentialing mechanisms and contractual performance agreements between the Ministry (MESRSI) and autonomous universities

The findings of this review must be translated into concrete governance strategies. This requires concerted interventions from the Ministry (MESRSI), the ANEAQ and the university leadership:

Formalize Contractual Performance Agreements: Policymakers should formalize multi-year contractual agreements between the Ministry and public universities, linking financial

allocations to verifiable outcomes in graduate employability, regional innovation and digital maturity under the PACTE ESRI 2030 framework.

Upgrade ANEAQ Evaluative Grids : ANEAQ should move from formal compliance audits to operationalized Key Performance Indicators (KPIs) on social equity, multilingual pedagogical support, and community engagement in its institutional accreditation grids. **Invest in Integrated Data Infrastructure:** Institutional leaders need to develop integrated HEIS and learning analytics systems to systematically monitor student retention, graduate career paths, and resource allocation efficiency.

Promote balanced strategies for multilingualism and internationalization: Universities should implement structured language-support frameworks for students transitioning from Arabic-medium secondary education to French/English higher instruction, while expanding South-South academic partnerships across Africa.

More empirical studies in higher education institutions especially in the under-researched areas such as equity, digitalization and community engagement may be needed for future academic research. To further develop the conceptual synthesis developed based on this systematic review, future empirical studies should test and validate the proposed indicator framework with representative samples from the Moroccan public sector. From a methodological point of view, we suggest moving beyond descriptive analyzes and uni-dimensional efficiency models, by applying a wider set of advanced quantitative techniques. Different methodological approaches can be considered, depending on the nature of the empirical data (formative vs. reflective constructs, time-series, network structures). As discussed by Hernandez-Diaz et al. (2021) we first use structural equation modeling approaches from covariance-based SEM (CB-SEM) to Partial Least Squares (PLS-SEM) with Confirmatory Tetrad Analysis (CTA-PLS) in line with the high-order hierarchical modeling. Second, advanced efficiency frontier techniques (Network DEA, Slack-Based Measures) and multi-criteria decision making models (AHP/ANP). Such a methodological plurality will enable us to test the convergent validity between the academic and administrative subsystems, providing a solid strategic steering tool for the Ministry (MESRSI) and university leadership. Depending on the particular institutional context, cross-regional studies of the Maghreb and other middle-income countries could help identify generalizable problems and solutions. Integrated performance models could be developed through interdisciplinary collaboration of education management, economics, sociology and information systems. Regional citation databases and multilingual bibliometric tools may improve visibility of research and enable more comprehensive analytical undertakings. Finally, involving stakeholders students, faculty, employers, and community members in the research design and indicator specification process may ensure that performance assessments capture diverse perspectives and contribute to the social value of higher education. However, this statement of equity and community engagement being under-investigated in Morocco needs to be nuanced in view of the works by Slimani and Abakouy who have already studied the participation of universities in territorial innovation and sustainable development goals. Hence, future research should investigate the micro-process mechanisms that influence the concrete translation of these commitments into measurable social impacts, taking into account the socio-economic specificities of emerging economies. Moreover, special attention should be paid to new methods, such as longitudinal studies or participative approaches, to overcome the limitations of the existing evaluation frameworks, which tend to oversimplify complex social realities at times.

The review provides a thorough, systematic synthesis of performance evaluation in higher education but has several methodological limitations that should be acknowledged:

Linguistic scope restriction: Database searches were restricted to peer-reviewed literature and official policy reports published in English and French, possibly excluding primary legislative texts and gray literature available only in Arabic.

Database Indexing Bias: The over-dependence on international bibliographic repositories (Scopus and Web of Science) introduces an inherent Anglophone indexing bias, which results in the systematic underrepresentation of domestic Francophone and Arabophone scholarship from Morocco and the larger MENA/African region .

Data fragmentation and empirical constraints: The review synthesized secondary literature and national policy documents that were characterized by fragmented administrative reporting especially in respect of graduate labour-market tracking and Third Mission community impacts.

Lack of Primary Empirical Validation: The proposed contextualized indicator framework is an inductive theoretical synthesis and its operational feasibility and construct validity need to be empirically pilot tested and field validated in Moroccan public university campuses in the future.

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