

Strategic Performance Management in Higher Education: A Balanced Scorecard-Based Indicator Framework for Moroccan Public Universities

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ABSTRACT

Public universities are increasingly expected to improve student success, teaching quality, research performance, institutional governance, and accountability, yet the data needed for educational leadership are often fragmented across academic and administrative units. This study develops a contextualized performance indicator framework for strategic management in Moroccan public higher education. It adopts a conceptual modelling approach based on a reasoned synthesis of higher education performance measurement, the Balanced Scorecard, public management, university governance, and quality assurance, complemented by documentary anchoring in Morocco's Framework Law No. 51-17 and the national higher education quality framework issued by ANEAQ. The framework is constructed through four stages: identifying core university missions; translating them into management dimensions; formulating generic objectives; and selecting indicators linked to definitions, data sources, reporting frequency, ownership, target-setting rules, and interpretation. The resulting model comprises six complementary dimensions: teaching and learning, research, governance and educational leadership, resources, external engagement and employability, and institutional learning and improvement. It is supported by indicator-quality criteria, a strategic-tactical-operational hierarchy, a proposed prioritization rule, and contextual adaptation principles for discipline, institutional size, digital maturity, and mission. The contribution is therefore not the invention of new indicators, but an integrated decision architecture that connects educational outcomes, governance, data ownership, contextualization, and continuous improvement. The study remains conceptual and does not claim stakeholder-based empirical validation; a two-round Delphi and multi-university pilot protocol is specified for subsequent testing.

Keywords: higher education, performance indicators, educational leadership, university governance, Balanced Scorecard

INTRODUCTION

Performance measurement has become a central concern in higher education because universities are expected not only to report resources and activities, but also to demonstrate student success, teaching quality, research performance, institutional effectiveness, and public value. These expectations place performance information at the intersection of educational leadership, university governance, and strategic decision-making (Cave et al., 1997; Behn, 2003; Musselin, 2022).

However, an abundance of data does not guarantee high-quality decision-making. In many public organizations, indicators remain fragmented across departments, are produced using varying definitions, and are rarely integrated into a regular analytical cycle. The issue is therefore not merely informational; it is also organizational and strategic (Behn, 2003; de Bruijn, 2007; Hood, 1991; Pollitt & Bouckaert, 2011). Recent research further shows that performance measurement and management systems reshape university practices, but may also shift attention toward compliance, comparison, and target achievement at the expense of certain dimensions of the academic mission (Guthrie et al., 2024).

The research question is therefore: how can a multidimensional performance indicator framework support educational leadership and strategic management in Moroccan public universities while respecting the diversity of academic missions and avoiding a reduction of university performance to financial or compliance measures? The article addresses this question through a methodological contribution informed by research on performance measurement systems, dashboards, and higher education management (Neely et al., 1995; Voyer, 2000).

This methodological clarification is important. The article does not report a stakeholder survey, interviews, or performance data from any identified institution. Its contextualization is documentary and design-oriented: the proposed architecture is explicitly cross-checked against Moroccan higher education governance and quality-assurance requirements, while empirical stakeholder validation is reserved for a subsequent phase. The distinction prevents conceptual alignment from being presented as evidence of actual institutional effectiveness.

The relevance of this approach also stems from the fact that public universities cannot be managed solely through compliance indicators. They must reconcile teaching and learning, student progression, research, inclusion, administrative effectiveness, societal engagement, and territorial responsibilities. A performance indicator framework becomes educationally meaningful when it makes these priorities visible without confining the university to a mechanical logic of numbers.

From this perspective, the Balanced Scorecard is used as a structuring framework rather than as a standardized model to be imported unchanged. The objective is not to impose a uniform architecture, but to provide a framework that enables institutions to select the indicators most relevant to their strategy, governance arrangements, and information maturity.

The expected contribution is threefold. Theoretically, the article contributes to higher education management research by clarifying the transition from fragmented reporting to strategic performance management. Methodologically, it proposes an operational matrix that can support university leaders, academic units, administrative departments, and governance bodies in selecting and interpreting indicators. Contextually, it adapts the Balanced Scorecard logic to Moroccan public universities through a multidimensional architecture that places teaching and learning, research, governance, external engagement, resources, and institutional improvement within a common decision-support framework.

Positioning and originality of the contribution

The literature on university performance proposes numerous indicators and several adaptations of the Balanced Scorecard. Recent reviews nevertheless confirm substantial variation in the perspectives, indicators, and implementation logics used in higher education, and they stress the need to adapt performance systems to institutional missions and stakeholder expectations (Mendes Junior & Alves, 2023; Coskun & Nizaeva, 2023). The contribution of the present framework should therefore be understood as architectural rather than indicator-invention. It advances prior higher education Balanced Scorecard applications through four linked design features: (1) education-specific dimensions that place student success and teaching quality alongside research and resources; (2) explicit strategic, tactical, and operational levels of use; (3) indicator governance through definitions, data ownership, target-setting, and interpretation rules; and (4) contextual adaptation to Moroccan quality-assurance requirements and to differences in discipline, size, digital maturity, and institutional mission. This combination converts a conventional scorecard logic into a governance and learning infrastructure rather than a reorganized list of KPIs.

THEORETICAL FRAMEWORK

Performance, Educational Leadership and Strategic Management in Higher Education

From individual indicators to an indicator system: An indicator can be defined as synthesized information used to assess a phenomenon, monitor its evolution, and inform a decision. In higher education, indicators may concern student access, progression, completion and success, teaching quality, human resources, finance,

research, governance, student experience, or graduate employability (Cave et al., 1997; Martin & Sauvageot, 2009).

The central challenge is selection. An indicator should not be retained simply because it is readily available. The indicators that are easiest to produce are not always the most useful, whereas some strategic indicators require more complex data collection and cautious interpretation (Neely et al., 1995; de Bruijn, 2007).

From administrative reporting to strategic management

Administrative reporting consists of collecting and transmitting data to meet information requirements. Strategic management goes further: it selects indicators according to institutional priorities, interprets them against explicit objectives, and mobilizes them in decision-making processes (Otley, 1999; Voyer, 2000).

In public organizations, measurement can serve several purposes: accountability, learning, motivation, comparison, resource allocation, or corrective action. These purposes are not equivalent; they require different indicators and different forms of use.

Contribution of the Balanced Scorecard

The Balanced Scorecard offers a useful approach for organizing this transition. It encourages a balance between financial and non-financial dimensions, connects objectives with indicators, and links outcomes to internal processes and organizational learning (Kaplan & Norton, 1992, 1996).

In higher education, dashboards can clarify priorities, structure information, and facilitate dialogue across institutional levels. The literature nevertheless warns against indicator-driven management when measures become autonomous targets or obscure the complexity of university missions (Cullen et al., 2003; Martin & Sauvageot, 2009). Recent reviews show that the Balanced Scorecard remains widely used in educational institutions precisely because it can connect mission, strategy, financial and non-financial indicators, while still requiring institutional contextualization (Mendes Junior & Alves, 2023; Coskun & Nizaeva, 2023).

Specific features of performance management in higher education

Performance management in public universities has several distinctive features. The first is the plurality of missions: teaching and learning, student development, scientific research, innovation, service to society, inclusion, and territorial development. This plurality prevents institutional effectiveness from being reduced to a single efficiency indicator or budgetary dimension.

The second feature concerns stakeholder diversity. Students, faculty and researchers, administrative staff, university leaders, supervisory authorities, socio-economic partners, and civil society do not expect the same outcomes. A performance indicator framework must therefore help educational leaders reconcile multiple expectations without substituting measurement for academic and strategic deliberation.

The third feature concerns academic autonomy. Indicators are more readily accepted when they are designed as supports for educational dialogue, quality improvement, and collective learning rather than as instruments of external control. The dashboard should therefore facilitate coordination across institutional levels while respecting disciplinary, pedagogical, and organizational specificities.

Higher education reform and university governance in Morocco

In Morocco, university strategic management is part of a broader movement to reform higher education, improve governance, strengthen quality, and diversify institutional missions. Framework Law No. 51-17 identifies evaluation, governance, and continuous improvement among the levers for transforming the education, training, and scientific research system. The national quality framework issued by the Agence Nationale d'Evaluation et d'Assurance Qualité de l'Enseignement Supérieur et de la Recherche Scientifique (ANEAQ) further organizes

institutional evaluation around five domains: governance and support functions, education and training, scientific research, student support and student life, and services to society. The framework explicitly connects quality assurance with institutional decision-making, strategic management, and continuous improvement (Kingdom of Morocco, 2019; ANEAQ, 2020). These national reference points provide a concrete documentary basis for contextualizing a performance management architecture for Moroccan public universities.

The proposed framework responds to this need while retaining a generic logic: it does not assign scores to any particular university and does not seek to replace accreditation, quality-assurance, or regulatory evaluation mechanisms. Rather, it provides an internal higher education management infrastructure that links teaching and learning, research, resource allocation, governance, external engagement, and institutional learning.

METHODOLOGY

The article adopts a conceptual modelling approach. The framework is constructed from a reasoned synthesis of literature on performance measurement in higher education, the Balanced Scorecard, public management, university governance, and quality assurance, supplemented by official Moroccan policy and quality-assurance documents. This methodological option is appropriate to the objective of designing an education-oriented indicator architecture rather than estimating causal effects from a sample of universities. The analysis therefore produces a design proposition whose internal coherence and contextual alignment can be assessed conceptually and documentarily, while claims about feasibility, acceptance, and impact require subsequent empirical testing.

The method follows four stages: identification of core academic and societal university missions; translation of these missions into management dimensions; formulation of generic objectives; and specification of indicators together with data sources, reporting frequency, ownership, target-setting rules, and interpretation. A fifth cross-checking step was added for contextualization: the six dimensions were compared with the domains and decision-oriented logic of the Moroccan national quality framework so that the proposed model complements, rather than duplicates, external quality assurance. This sequence is intended to avoid the accumulation of unprioritized indicators and to maintain a visible link between educational priorities, institutional context, and decision-making.

The proposed indicators are not mandatory standards. They form an operational basis that should be adapted to the size of the institution, its institutional project, information system, strategic priorities, and the requirements of supervisory authorities.

Delimitation of the theoretical corpus

The framework is based on a purposive, reasoned selection of sources covering five complementary areas: performance measurement in higher education; management control systems and dashboards; public management; university governance and quality assurance; and Moroccan higher education policy and evaluation. Sources were retained when they contributed directly to at least one design question: which dimensions should be monitored, what makes an indicator decision-useful, how measurement connects to governance, how stakeholders can appropriate the system, or how the model should be adapted to the Moroccan institutional context. Foundational contributions were retained where they define core concepts, while recent studies were used to reflect contemporary higher education performance-management debates (Guthrie et al., 2024; Oware & Mokoena, 2025). Official Moroccan sources were included to establish contextual alignment rather than to infer empirical performance.

The corpus does not seek the statistical exhaustiveness of a systematic review and therefore does not support bibliometric conclusions about the entire literature. To improve transparency, the synthesis was organized around explicit inclusion and exclusion principles. Included sources had to address institutional-level performance, indicators, strategic management, governance, quality assurance, or higher education decision-making. Sources limited to league-table ranking, isolated financial ratios, or purely technical metrics without a governance or educational-management link were not used to structure the model. The synthesis was then

organized thematically around four questions: which performance dimensions should be monitored, which properties make an indicator useful, how measurement can be connected to decision-making, and which conditions foster stakeholder ownership. This clarification improves traceability while preserving the article's conceptual, non-systematic design.

Contextual documentary anchoring and alignment check

Contextualization was conducted through a documentary alignment check rather than through institutional performance data. Framework Law No. 51-17 and the ANEAQ national quality framework were used as reference points because they articulate expectations concerning governance, quality assurance, education and training, scientific research, student support, societal service, decision-making, and continuous improvement. The six proposed dimensions were mapped against these national domains. Areas of direct overlap were retained, while institutional learning and improvement was treated as a cross-cutting dimension that converts evaluation results into corrective action and organizational learning. This step strengthens contextual validity without implying that Moroccan university stakeholders have already endorsed the proposed indicator set.

Empirical validation protocol for subsequent testing

A subsequent empirical phase should use a two-round Delphi design followed by a multi-university pilot. A panel of approximately 18-24 participants drawn from four to six public universities should combine senior university leaders, deans or programme heads, quality-assurance managers, administrative managers, faculty/researchers, and student or graduate representatives. In Round 1, each indicator would be rated on relevance, feasibility, actionability, and clarity using five-point scales and open comments. A practical consensus rule would retain indicators with a median rating of at least 4 and an interquartile range of no more than 1; contested indicators would be revised and re-rated in Round 2. The resulting set should then be piloted in two or three contrasting universities for six to twelve months to test data availability, reporting burden, timeliness, comparability, and actual use in management decisions. These thresholds and sample ranges are proposed design parameters, not findings of the present study.

Indicator selection criteria

The proposed indicators were selected using five criteria. The first is strategic alignment: each indicator must be linked to an identifiable institutional priority. The second is informational robustness: the underlying data must be definable, collectable, and verifiable. The third is readability: the indicator must be understandable to the stakeholders concerned. The fourth is actionability: a useful indicator must be capable of supporting a decision, corrective action, or resource reallocation. The fifth is balance: the framework should combine input, process, and outcome indicators in order to avoid a partial view of university performance. For local prioritization, the article proposes an indicative weighted score: strategic relevance 30%, reliability/feasibility 20%, actionability 20%, comparability 15%, and readability 15%. Each criterion is rated from 1 to 5 and the weighted score is converted to a 0-100 scale. A score of 70 or more, with no individual criterion below 3, may be used as an initial screening threshold. The weights and threshold are deliberately presented as a starting rule and should be validated or recalibrated through stakeholder consultation.

Modelling procedure

The modelling procedure moved from university missions to management dimensions, and then from dimensions to objectives and indicators. Each dimension was associated with data sources, reporting frequency, responsible data owners, and decision uses. The same core indicator is not expected to carry identical meaning across all institutions. Research indicators should be field-normalized where disciplinary publication patterns differ; absolute volumes should be paired with rates in institutions of different size; digitally mature universities may use more frequent or automated indicators than institutions relying on manual systems; and target levels should reflect institutional mission rather than a universal benchmark. This contextual adaptation is part of the model rather than an afterthought.

The coherence of the framework also rests on the hierarchy of levels of interpretation. The same indicator may have a strategic, tactical, or operational use depending on the intended user. The proposed model incorporates this plurality of uses in order to strengthen the relevance of the framework across different levels of university governance.

PRINCIPLES FOR BUILDING THE FRAMEWORK

The construction of a performance indicator framework should follow several principles. The first is relevance: each indicator must answer a management question. The second is feasibility: the necessary data must be collectable at reasonable cost and with sufficient reliability. The third is comparability: definitions should remain stable over time. The fourth is usefulness: the indicator must inform a decision, an arbitration, or an improvement action (Neely et al., 1995; Cave et al., 1997).

A fifth principle concerns interpretive caution. Indicators never capture the entirety of reality; they provide a simplified representation of it. They should therefore be complemented by qualitative analyses, stakeholder dialogue, and contextual information.

Quality criteria for an indicator

A university performance indicator should be assessed before being incorporated into a dashboard. This prior assessment helps avoid unreliable, redundant, or difficult-to-use measures. It also helps distinguish essential indicators from secondary indicators.

The following table summarizes the minimum criteria to be verified before adopting an indicator within an institutional framework.

Table 1: Validation Criteria for Performance Indicators

These criteria should be discussed before the framework is put into operation. An indicator may be theoretically relevant but unusable if the data are unavailable, if departments do not share the same definition, or if the result does not lead to any management action.

Criterion	Validation question	Relevance for higher education management
Relevance	Does the indicator address an institutional priority?	Avoids measures disconnected from educational or institutional priorities.
Reliability	Is the data clearly defined and verifiable?	Strengthens confidence in the dashboard.
Comparability	Does the definition remain stable over time?	Enables longitudinal monitoring and gap analysis.
Actionability	Can the result trigger an educational or managerial decision?	Transforms measurement into a support for improvement and action.
Readability	Is the indicator understandable to users?	Facilitates appropriation by academic and administrative stakeholders.

RESULTS: PROPOSED GENERIC FRAMEWORK

Table 2: Core Performance Indicator Matrix for Higher Education

Higher education dimension	Generic objective	Core indicators proposed for operationalization	Data source	Frequency
Teaching and learning	Monitor educational quality, student progression, and effectiveness of study pathways	First-year success rate; retention rate; median time to graduation; student experience index	Student administration; surveys; learning platforms	Semi-annual / annual
Research	Assess scientific output, funded activity, and doctoral dynamics	Peer-reviewed publications per FTE academic; externally funded projects per 100 FTE researchers; doctoral completion rate	Research structures; bibliographic databases; doctoral schools	Annual
Governance and educational leadership	Strengthen strategic coordination, quality assurance, transparency, and accountability	Action-plan completion rate; median administrative processing time; quality-action closure rate	University presidency; faculties/schools; quality units; administrative departments	Quarterly
Resources	Optimize human, financial, material, and digital resources in support of academic missions	Budget execution rate; student-to-academic-staff ratio; digital-service availability	Finance; HR; assets; information systems	Quarterly / annual
External engagement and employability	Monitor university-society links and graduate transition	Graduate employment rate at 12 months; active partner projects; mobility participation rate	External relations; observatories; career services; international relations	Annual
Institutional learning and improvement	Turn performance evidence into continuous educational and organizational improvement	Corrective-action closure rate; staff development participation rate	Dashboards; quality reports; internal audits; HR/training records	Quarterly / annual

The proposed matrix draws on the balancing logic of the Balanced Scorecard while adapting it to higher education missions. It does not position the financial dimension as the central objective, but rather as a resource dimension serving teaching and learning, research, governance and educational leadership, external engagement, and institutional improvement (Kaplan & Norton, 1992, 1996; Martin & Sauvageot, 2009). This choice is consistent with recent literature emphasizing the multidimensional nature of university performance and the need to connect quality, governance, academic missions, and continuous improvement (Guthrie et al., 2024; Oware & Mokoena, 2025).

To respond to the risk that broad indicator labels conceal different definitions, the 18 core indicators in Table 2 are fully operationalized in Appendix A. For each indicator, the appendix specifies a definition or formula, the primary data owner, a target-setting or benchmarking rule, and an interpretation rule. Universal numerical targets are intentionally avoided because institutional mission, discipline mix, size, and data maturity differ across public universities; instead, the framework specifies how targets should be set and documented.

Interpretation of the six dimensions of the framework

The teaching and learning dimension reflects the university's capacity to provide coherent, accessible, and effective study pathways and to support student success. It should not be limited to success rates; it should also incorporate dropout and retention, progression, student satisfaction, and the capacity of educational arrangements to respond to diverse student populations.

The research dimension is intended to monitor the institution's scientific dynamics. Indicators may cover publications, funded projects, completed doctoral theses, research-team development, and scientific partnerships. Their interpretation should account for disciplinary differences and the specific time horizons of scientific production.

The governance and educational leadership dimension concerns the institution's capacity to coordinate academic and administrative decisions, monitor action plans, support quality assurance, and ensure process transparency. It includes implementation rates, processing times, review meetings, quality-assurance mechanisms, and accountability arrangements.

The resources dimension assesses the use of human, financial, material, and digital resources. It should not be interpreted as an autonomous end, but as a set of means supporting academic and administrative missions.

The external engagement and employability dimension measures interactions with the surrounding environment: partnerships, graduate transition to employment, mobility, cooperation, innovation, and relationships with socio-economic stakeholders. It reflects the university's contribution to student employability, its territory, and its wider ecosystem.

Finally, the institutional learning and improvement dimension assesses the university's capacity to use evidence to improve educational and organizational practices. It gives the dashboard a dynamic function: analyzing gaps, deciding on corrective action, supporting staff development, and capitalizing on institutional learning.

Table 3: Minimum Indicator Specification Sheet

The indicator specification sheet is a standardization tool. It reduces ambiguity in calculation and facilitates comparison over time. It also documents responsibilities, which is essential when data originate from different departments.

Field	Expected content
Indicator name	Short, stable, and understandable wording.

Field	Expected content
Associated objective	Educational, academic, or institutional priority to which the indicator is linked.
Calculation method	Formula, scope, possible exclusions, and unit of measurement.
Data source	Producing department, information system, or survey used.
Frequency	Frequency of production and dissemination.
Responsible actor	Actor responsible for collection, validation, and interpretation.
Intended use	Educational or managerial decision, monitoring, alert, accountability, or improvement expected.
Direction of desired change	Whether a higher or lower value is normally desirable, or whether an optimal range is expected.
Target / reference value	Institution-specific annual target, baseline-improvement objective, regulatory threshold, or discipline-adjusted benchmark.
Disaggregation rule	Required breakdowns, for example by faculty, programme, discipline, cycle, gender, or student category where relevant and lawful.
Data owner	Unit accountable for producing and documenting the source data.
Validator	Actor or unit responsible for checking definition, completeness, and consistency before dissemination.
Interpretation rule	Conditions under which a result triggers analysis, escalation, corrective action, or no action.

Prioritization and target-setting logic

Prioritization should occur before dashboard deployment. The proposed weighted score is intended to identify a manageable core set, not to produce a ranking of departments or universities. Target setting follows the same principle of contextual responsibility. Each retained indicator should have a documented target source: previous

institutional performance, an approved strategic objective, a regulatory or quality-assurance requirement, or a discipline-adjusted comparator. Where no defensible external benchmark exists, the preferred target is a transparent improvement trajectory from an institutional baseline rather than an arbitrary universal number.

Hierarchy of Indicators

An operational framework should distinguish strategic, tactical, and operational indicators. Strategic indicators inform university governance and educational leadership; tactical indicators support coordination across academic and administrative units; and operational indicators enable day-to-day process monitoring. This hierarchy limits the risk of information overload and helps connect institutional priorities with local action.

Table 4: Levels of Interpretation of the Framework

Level	Primary user	Function of the indicator	Example of use
Strategic	University governing bodies and senior academic leaders	Strategic direction, educational leadership, arbitration, accountability	Monitoring student success, quality priorities, and the institutional project
Tactical	Faculty/school, programme, and functional-unit leaders	Coordination, resource allocation, quality improvement	Analysis of gaps between educational objectives and achievements
Operational	Administrative services and teaching teams	Process monitoring and rapid corrective action	Student services, course delivery, deadlines, flows, and procedures

The hierarchy also clarifies responsibilities. The same indicator may be useful at several levels, but its interpretation differs according to the user. A student success rate, for example, may inform university-level strategic governance, programme-level pedagogical coordination, or the improvement of a specific course unit.

Strategic interpretation should remain synthetic in order to facilitate decisions by governing bodies. It may rely on a limited number of high-level indicators, such as progress in student success, research dynamics, advancement of the institutional project, or financial sustainability.

Tactical interpretation is more relevant to component heads, functional departments, and administrative services. It helps explain the causes of gaps and coordinate actions across several units. At this level, the indicator becomes a support for dialogue and coordination.

Operational interpretation focuses on process monitoring. It helps quickly detect delays, bottlenecks, or processing difficulties. It may concern student-administration processing times, monitoring of agreements, equipment availability, or completion of internal training actions.

Implementation Conditions

Implementing an indicator framework first requires clear data governance. Each indicator should have a definition, source, calculation method, reporting frequency, responsible actor, and validation process. Without these elements, the dashboard risks becoming a formal but unreliable tool (Voyer, 2000; Otley, 1999; de Bruijn, 2007; Cullen et al., 2003).

The second condition is integration with the information system. Required data should be collected regularly, checked, and consolidated. The challenge is not purely technical: information quality also depends on cooperation across departments, standardization of definitions, and the capacity to interpret results.

The third condition concerns stakeholder ownership. A framework imposed without discussion can generate resistance or strategic adaptation to the indicators. Participation by academic leaders, administrative managers, teaching teams, and other relevant university stakeholders is therefore essential to ensure the relevance, legitimacy, and effective educational use of the data.

Progressive implementation approach

The framework should be implemented progressively. An overly rapid rollout may create administrative overload, weak ownership, or loss of confidence in the data. It is preferable to begin with a limited core set of indicators and then gradually extend the system according to the maturity of the information system.

The pilot phase plays an important role. It makes it possible to test definitions, verify data availability, identify bottlenecks, and adjust reporting frequency. It also supports stakeholder learning before the dashboard is generalized.

Data governance and responsibilities

Data governance is a condition for credibility. Each indicator should be assigned to a data owner, a validator, and a primary user. This clarification reduces the risk of duplication, inconsistencies, or divergences across departments.

The framework should also provide for regular collective review. Results should be discussed in management meetings, linked to action plans, and monitored over time. Without such an animation cycle, the dashboard may remain a reporting document with little real impact on decision-making.

Table 5: Recommended Implementation Sequence

This sequence links the technical construction of the framework to its organizational appropriation. The success of the system depends less on the number of indicators retained than on the university's capacity to use them regularly to understand, decide, and improve.

Stage	Objective	Expected result
Diagnosis	Identify existing educational and administrative data, leadership needs, and production difficulties.	Mapping of data, educational priorities, and stakeholders.
Selection	Choose a limited set of indicators aligned with academic and institutional priorities.	Validated initial higher education indicator framework.
Formalization	Define indicator sheets, sources, and responsibilities.	Indicator dictionary.
Pilot phase	Test data collection, consolidation, and interpretation.	Methodological adjustments.

Stage	Objective	Expected result
Institutionalization	Integrate the dashboard into strategic, quality-assurance, and educational decision cycles.	Regular performance/quality reviews and improvement plans.

DISCUSSION

The contribution of this article is to propose a framework that is simultaneously generic, multidimensional, contextualizable, and operationally specified. It is not a universal model to be applied mechanically. Relative to conventional higher education Balanced Scorecard applications, its added value lies in the integration of four layers that are often treated separately: mission-based performance dimensions, indicator-quality and prioritization criteria, multi-level decision use, and data-governance/implementation rules.

The revised framework adds a fifth layer of contextualization by linking the architecture to Moroccan quality-assurance domains and by requiring discipline, size, digital maturity, and mission to be considered when setting targets and interpreting results. The theoretical contribution is thus a translation architecture between performance measurement and university governance, rather than a claim to invent novel individual indicators.

The proposal also highlights the difference between measurement and strategic management. Measuring means producing information; managing means assigning meaning to that information, embedding it in management dialogue, and using it to make decisions. This distinction is essential in public organizations, where the proliferation of indicators can sometimes weaken rather than improve decision-making.

Finally, the proposed framework encourages a balanced interpretation of higher education performance. Teaching and learning, research, resources, governance, external engagement, and institutional improvement should be analyzed jointly. Sustainable university performance cannot result from isolated optimization; it depends on coherence among educational missions, resources, processes, stakeholder relationships, and learning.

Implications for higher education leadership and practice

For university leaders, the framework can support the preparation of strategic and quality-review meetings, the formalization of annual objectives, and the alignment of academic and administrative action plans. It makes it possible to move from fragmented data toward a shared interpretation of student success and institutional performance.

For administrative departments, the framework clarifies information requirements and data-production responsibilities. It can help reduce repeated ad hoc data requests by stabilizing definitions and validation channels.

For academic units, the dashboard can become a tool for discussing student pathways, teaching quality, research, partnerships, graduate employability, or resource use. Its acceptance nevertheless depends on demonstrating that it supports educational missions and continuous improvement rather than reducing academic work to ratios.

Risks and safeguards in educational performance management

The first risk is information overload. An overly extensive framework may produce the opposite of the intended effect: data become abundant but remain underused. The response is to distinguish clearly among core indicators, monitoring indicators, and complementary indicators.

The second risk is a focus on what is easiest to measure. Important dimensions such as teaching quality, student experience, scientific impact, or social contribution require qualitative measures, surveys, and cautious

interpretation. The framework should therefore combine quantitative figures, contextual analysis, and stakeholder dialogue.

The third risk is the punitive use of indicators. When measurement is perceived as an instrument of sanction, stakeholders may seek to circumvent the indicators or improve the number without improving the underlying reality. The learning purpose of the system should therefore be stated explicitly.

Table 6: Implementation Risks and Mitigation Mechanisms

These mechanisms show that the quality of a framework depends not only on its design. It also depends on how it is used, updated, and embedded in a decision-making culture based on discussed and interpreted evidence.

Risk	Possible manifestation	Mitigation mechanism
Indicator overload	Large volumes of data that are rarely used.	Limit the number of strategic indicators and review the framework periodically.
Low reliability	Contradictory data or different calculation methods across departments.	Formalize definitions, sources, and responsibilities in an indicator dictionary.
Stakeholder resistance	Perception of the dashboard as an external-control or sanction instrument.	Involve academic and administrative users in indicator selection, interpretation, and review.
Compliance effect	Pursuit of a favorable number rather than genuine improvement.	Combine quantitative indicators, qualitative evidence, student/stakeholder feedback, and performance reviews.

Moroccan contextual alignment and boundary conditions

The documentary alignment check shows substantial correspondence between the proposed architecture and the Moroccan national quality framework, while also revealing an intentional difference in purpose. ANEAQ's framework is an evaluation and quality-assurance reference, whereas the present model is designed as an internal strategic management system. The mapping below therefore demonstrates contextual relevance, not institutional validation or regulatory equivalence.

Table 7: Documentary Alignment with the Moroccan National Quality Framework

Proposed dimension	Closest ANEAQ domain(s)	Contextual interpretation
Teaching and learning	Formation; student support and student life	Student success, progression, teaching quality, orientation, and educational experience are treated as management outcomes rather than only reporting items.

Research	Scientific research	Research output, doctoral dynamics, partnerships, and research capacity are monitored with discipline-sensitive interpretation.
Governance and educational leadership	Governance and management of support functions	Action-plan execution, quality follow-up, transparency, process performance, and strategic coordination support institutional decision-making.
Resources	Governance and management of support functions	Human, financial, material, information-system, and digital resources are treated as enablers of academic missions.
External engagement and employability	Student support and employability; services to society	Graduate transition, partnerships, mobility, and societal engagement connect the university to its economic, territorial, and civic environment.
Institutional learning and improvement	Cross-cutting across all ANEAQ domains	Evaluation evidence is converted into corrective actions, review cycles, staff development, and organizational learning.

Source: author's conceptual mapping based on Kingdom of Morocco (2019) and ANEAQ (2020). The mapping does not imply endorsement by ANEAQ or empirical validation by Moroccan universities.

Table 8: Contextual Adaptation Rules Before Institutional Use

Contextual factor	Required adaptation	Example
Disciplinary profile	Normalize indicators whose production cycles and output conventions vary strongly by field.	Interpret publication intensity and time-to-degree separately for medicine, engineering, humanities, and other fields rather than applying a single threshold.
Institutional size and structure	Pair absolute counts with rates and define the appropriate unit of analysis.	Use publications per FTE academic and success rates by programme/faculty in addition to university totals.
Digital and data maturity	Phase indicators according to data availability, automation, and reliability.	Begin with a smaller verified core set where systems are fragmented; increase frequency and granularity as data governance matures.
Institutional mission and territory	Adjust weights, targets, and interpretation to strategic mission and stakeholder priorities.	A research-intensive institution may weight scientific output more heavily, whereas a regional university may emphasize access, employability, and societal engagement.

LIMITATIONS AND FUTURE RESEARCH

The main limitation of the article lies in its conceptual nature and the absence of stakeholder-based empirical validation across Moroccan public universities. The documentary alignment with national quality-assurance requirements strengthens contextual plausibility, but it cannot establish whether university presidents, deans, quality managers, faculty, administrators, students, or other stakeholders consider the proposed dimensions and indicators relevant, feasible, or legitimate. The model therefore cannot yet demonstrate effects on student outcomes, educational quality, organizational behaviour, or decision quality.

A second limitation concerns institutional heterogeneity. Public universities differ in size, disciplinary structure, territorial role, administrative maturity, information systems, and strategic priorities. For that reason, Appendix A specifies target-setting rules rather than universal numerical targets, and Table 8 makes contextual adaptation an explicit condition of implementation. This improves transferability while acknowledging that comparability must sometimes be achieved through field normalization, disaggregation, or rate-based measures rather than identical raw thresholds.

The immediate next step is empirical content validation using the two-round Delphi protocol specified in the methodology. The panel should include university presidents or vice-presidents, deans or programme leaders, quality-assurance managers, administrative managers, faculty/researchers, and student or graduate representatives across several public universities. This stage would test indicator relevance, feasibility, priority, clarity, and institutional ownership, and would allow the proposed weights and screening threshold to be recalibrated.

A second empirical step should pilot the validated indicator set in contrasting universities before any broader generalization. Such a pilot can measure data availability, production burden, timeliness, consistency across units, and the extent to which indicators are actually discussed and linked to action plans. Comparative case analysis and a subsequent quantitative survey could then examine whether the framework improves evidence-informed educational leadership and whether its effects vary with institutional size, discipline mix, digital maturity, or mission.

CONCLUSION

This article proposed a generic performance indicator framework for strategic performance management in higher education, with a contextual focus on Moroccan public universities. The objective was to move beyond fragmented reporting toward a structured, readable, and adaptable matrix aligned with educational missions and institutional priorities.

The main contribution lies in the proposed translation architecture: six higher education performance dimensions are connected to operational definitions, data ownership, target-setting rules, quality criteria, strategic-tactical-operational uses, prioritization, contextual adaptation, and an implementation sequence. Documentary alignment with Morocco's national quality-assurance framework strengthens contextual grounding while preserving the distinction between internal strategic management and external evaluation. In this sense, the framework moves beyond a KPI catalogue by specifying how indicators should be governed, interpreted, prioritized, and adapted before they are used for decision-making.

The limitations of the article stem from its conceptual nature. The model has been contextually anchored but not empirically endorsed by university stakeholders. The proposed Delphi and pilot protocol therefore constitutes the necessary next stage for testing relevance, feasibility, ownership, and decision usefulness. Such validation would permit recalibration of indicator weights and targets and would determine whether the framework can evolve from a methodological proposal into a genuinely operational performance-management tool for Moroccan public universities.

DECLARATIONS

Originality and exclusive submission: The author declares that this article is original, has not been published previously, and is not under simultaneous consideration by another journal.

Ethical approval: Not applicable. The study is conceptual and involves no human participants, animals, or personal data.

Data availability: No empirical dataset was created for this study. The materials used are drawn from the literature cited in the manuscript.

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APPENDIX A: OPERATIONAL SPECIFICATION OF THE 18 CORE INDICATORS

The following operational definitions are proposed to prevent ambiguity and to support future Delphi validation and institutional piloting. Target values are not presented as universal standards: each university should document the target source and apply discipline- or mission-specific benchmarking where appropriate.

Dimension	Core indicator	Operational definition / formula	Primary data owner	Target / reference rule	Interpretation rule
Teaching and learning	First-year success rate	Number of first-year students who successfully complete the institutionally defined required credits / number of first-year students included in the cohort $\times 100$.	Student affairs / academic affairs	Approved annual target based on cohort baseline and programme characteristics; compare within programme and over time.	A decline triggers programme-level analysis of progression, assessment, pedagogy, and student support; do not compare fields without contextualization.
Teaching and learning	Retention rate	Number of eligible students from cohort t who re-enrol in $t+1$ / number of eligible students in cohort $t \times 100$.	Student affairs	Baseline-improvement target; disaggregate by programme and relevant student categories.	A falling rate is an early-warning signal; interpret jointly with transfer, graduation, leave, and dropout reasons.
Teaching and learning	Median time to graduation	Median number of semesters between first enrolment in the programme and degree award among graduates in the reference cohort.	Student administration	Programme-specific reference range; compare cohorts rather than impose one university-wide value.	Longer duration may signal curricular bottlenecks or student-support issues; field and programme structure must be considered.
Teaching and learning	Student experience index	Documented weighted mean of standardized survey items covering teaching	Quality unit / institutional research	Baseline and improvement target with minimum	Use trends and sub-dimensions; avoid interpreting a composite score

		quality, feedback, academic support, services, and digital access; scale and weights must be published.		response-rate requirement.	without response-rate and subgroup analysis.
Research	Peer-reviewed publications per FTE academic	Number of qualifying peer-reviewed publications during the period / full-time-equivalent academic and research staff. Counting rules for co-authorship and indexing must be documented.	Research office / bibliometric unit	Field-normalized benchmark and multi-year trend; no single cross-disciplinary threshold.	Interpret with quality, field norms, collaboration, and research mission; volume alone should not determine performance.
Research	Externally funded projects per 100 FTE researchers	Number of active externally funded competitive research projects / FTE research-active staff $\times 100$.	Research office / finance	Mission- and field-sensitive annual target; distinguish new awards from active projects.	Shows funded research capacity; interpret jointly with project value, field opportunities, and completion quality.
Research	Doctoral completion rate	Number of doctoral candidates in an entry cohort completing within the institutionally defined expected period / number of candidates in that cohort eligible for completion analysis $\times 100$.	Doctoral studies office	Cohort-based target reflecting discipline and doctoral programme characteristics.	Low completion requires analysis of supervision, funding, research environment, and field-specific time horizons.

Governance and educational leadership	Action-plan completion rate	Number of strategic or unit actions completed by their approved due date / number of actions due during the period $\times 100$.	Presidency / strategy office	Target derived from approved institutional project and annual action plan.	A low rate triggers analysis of priorities, resources, dependencies, and unrealistic planning rather than automatic sanction.
Governance and educational leadership	Median administrative processing time	Median number of working days between receipt of a complete request and the formal decision or completion of the process.	Relevant administrative service	Service-standard target or baseline-reduction target by process type.	Use process-specific distributions; rising time indicates bottlenecks, but complexity and completeness must be controlled.
Governance and educational leadership	Quality-action closure rate	Number of quality-review recommendations or corrective actions closed by the agreed due date / number due during the period $\times 100$.	Quality assurance unit	Annual target linked to approved quality improvement plan.	Low closure indicates implementation gaps; verify whether delays reflect resource constraints, dependency, or weak ownership.
Resources	Budget execution rate	Eligible annual expenditure executed / approved annual budget $\times 100$, with the accounting basis stated consistently.	Finance department	Approved budget trajectory and year-end execution objective; interpret by expenditure category.	Very low execution may indicate implementation delays; very high execution is not inherently positive without value-for-money and mission alignment.
Resources	Student-to-academic-staff ratio	Number of enrolled students / FTE academic staff, calculated	HR and student	Discipline- and programme-adjusted reference	High ratios may indicate capacity pressure; interpretation

		at the relevant institutional or programme level.	administration	range; monitor trend and outliers.	must consider teaching model, class size, laboratories, and programme design.
Resources	Digital-service availability	Hours that defined critical digital services are available / scheduled service hours $\times$ 100.	Information systems department	Service-level target defined for each critical system.	Below-target availability triggers root-cause and continuity analysis; distinguish planned maintenance from unplanned outage.
External engagement and employability	Graduate employment rate at 12 months	Number of surveyed graduates in employment 12 months after graduation / number of responding graduates in the labour force $\times$ 100; further study should be reported separately.	Graduate observatory / career services	Programme- and field-sensitive benchmark with minimum survey response-rate rule.	Interpret with labour-market conditions, further study, employment quality, and response bias; avoid simple cross-field ranking.
External engagement and employability	Active partner projects	Count of partnership agreements with documented joint activity, deliverable, mobility, project, or service during the reference period.	External relations partnership office	Target based on institutional mission; prioritize activity and outcomes over signed-agreement volume.	A high count is meaningful only when agreements are active; review dormant partnerships and concentration risk.

External engagement and employability	Mobility participation rate	Number of eligible students or staff participating in recognized inbound/outbound mobility / eligible population $\times 100$; report student/staff and inbound/outbound separately.	International relations office	Target linked to internationalization strategy and programme eligibility.	Interpret access, reciprocity, field constraints, and inclusion; raw mobility volumes should not substitute for rates.
Institutional learning and improvement	Corrective-action closure rate	Number of improvement actions completed and verified / number of actions due in the improvement plan $\times 100$.	Quality unit / action owner	Target specified in the improvement plan, with verification criteria.	Measures follow-through from evidence to action; distinguish formal closure from verified improvement.
Institutional learning and improvement	Staff development participation rate	Number of eligible staff completing approved professional-development activity during the period / number of eligible staff $\times 100$.	Human resources / training unit	Annual target by staff category and strategic capability priorities.	Interpret participation with relevance, completion, and transfer to practice; attendance alone does not demonstrate learning impact.

Proposed prioritization formula: Priority score = $20 \times (0.30R + 0.20F + 0.20A + 0.15C + 0.15L)$, where each criterion is rated from 1 to 5 for strategic relevance (R), reliability/feasibility (F), actionability (A), comparability (C), and readability (L). Suggested initial inclusion rule: score $\geq 70/100$ and no criterion < 3 . The weights and threshold require empirical stakeholder validation.