International journal of applied management and economics
Vol : 02 , N° 19 , April 2026
ISSN : 2509-0720

Beyond the Toolbox: Funding Models and Managerial Capacity as Determinants of Digital Transformation in Higher Education.

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Conflict of interest: The author reports no conflict of interest.

To quote this article: EL JAI .Y & BELFAKIR .L (2026) « Beyond the Toolbox: Funding Models and Managerial Capacity as Determinants of Digital Transformation in Higher Education »,

IJAME : Volume 02, N° 19 | Pp: 172 – 194.

DOI : 10.5281/zenodo.19284442

Abstract

The pervasive trend of digitalisation without genuine transformation, also known as the proliferation of technology which fails to catalyse profound strategic change, remains a persistent challenge in the domain of higher education (HE) and continuous scholarly debate. In fact, the prevailing technological imperative that treats technology as an evident solution has resulted in the implementation of funding and policy models which focus on investing in the toolbox over human capital and organisational capacities needed to use technology effectively and ethically. Our study argues that technology itself cannot result in transformative outcomes; instead, it is important to address the structural reasoning of funding models along with the often-neglected variable of managerial capacity building for effective change. In this regard, our study examines a purposive sample of national and international policy frameworks and institutional strategic plans through the use of a critical qualitative document analysis (CQDA) approach through a critical realist paradigm lens to provide a comprehensive understanding of efficient digitalisation approaches in HE.

Our analysis provides an underlying mismatch between the funding logics of national discourse, which are characterised by short-term project-based, competitive and output-focused funding, and the international long-term, iterative and capacity-building processes of genuine transformation. Especially when our findings reveal a conventional presumption of managerial readiness in the face of technological advance instead of actively working on developing managerial capacity, including leadership, professional development, and management structures transformation that are primordial for effective implementation. In this respect, our findings help explain this mismatch as a causal mechanism that systematically produces a number of observed outcomes, namely underutilised systems, fragmented innovation and stalled sustainable change. Moreover, our study suggests that meaningful and effective digital change calls for a decisive policy reorientation away from funding technology procurement toward investment in the durable organisational and managerial ecosystems that enable sustainable pedagogical and strategic transformation.

Keywords: Higher education, Digitalisation, Leadership, Strategic Management, Funding

1 INTRODUCTION

On a global scale, higher education institutions (HEIs) are navigating a challenging era of profound systemic digital transformation, an imperative to implement technology into teaching, learning and operational tasks deemed a ubiquitous strategic priority (Selwyn, 2014; Weller, 2020). Indeed, HEIs are competing to implement this drive, fuelled by ambitions of pedagogical innovation, widened education access and institutional competitiveness across this digital age; in response, large-scale public and institutional funding has been allocated to efficiently implement these digital initiatives, including national grants for technology infrastructure, investments in learning management systems and virtual learning environment platforms. Yet, despite these considerable resources, the proliferation of technological tools that fail to operationalise meaningful, systemic change in pedagogical practices, strategic direction and organisational cultures (Henderson et al., 2017; Kirkwood & Price, 2014) remain a persistent and challenging outcome prevailing across the HE sectors.

This continuous disparity between technological investment and transformative change signals a fundamental inconsistency in the underlying reasoning of digitalisation reforms, not a failure of technology per se, most notably when the prevailing narratives exhibit a form of techno-determinism that frames technology, in its own volition, as the primary agent of change and a mere toolbox to be procured and deployed (Selwyn, 2011). Accordingly, the policy and funding models which are frequently adopted often emphasise the procurement of technology, such as hardware and software and use these to measure the success of digital implementation through metrics of adoption and success. Yet, the emphasis put on the very essence of technological artefact risks overlooking the tangled social, organisational and human processes deemed fundamental to effectively harnessing technology for a profound and sustainable change in HE. Therefore, our study highlights how the critical determinants of success do not lie in the technological tools themselves, but in the revamped structural conditions that actually enable or constrain their effective use for meeting national ambitions and plans.

From a growing body of critical scholarship, our study particularly focuses on the design of funding models being a powerful structural determinant of effective digitalisation, especially when competitive, short-term project funding repeatedly misalign with the standard long-term, iterative and culturally embedded processes of effective change, thus promoting superficial adherence and compliance over sustainable capacity building for change (Porter et al., 2014). Inherently connected is the notion of managerial and organisational capacity, which

encompasses leadership, professional development, and administrative support, along with strategic coherence, which are collectively necessary to translate funding into effective implementation and practice. Yet an ongoing challenge lies in how this capacity is often under-studied and under-resourced in a number of policy resources and commonly treated as an assumed given, not as a central investment priority (Bennett & Lockyer, 2004).

Hence, our study argues that moving beyond the toolbox requires a shift in research focus from riveting on technological tools and devices to critically examining the higher-order systemic determinants discussed in our subsequent sections. By these means, our study is guided by a central research question: how do the embedded reasoning of funding models interact with the realities of managerial capacity to determine the outcomes of digital change in the Moroccan HE? To answer the aforementioned, our study adopts a critical qualitative document analysis (CQDA) of both national and international policy texts and documentation relative to digitalisation and adherence to international standards. Our analysis aims to reveal the systemic discrepancies that perpetuate digitalisation without change and to clearly identify the causal mechanisms in which funding and capacity play as decisive determinants of change and reform.

The structure of this work proceeds as follows. First, a review of related work establishes the conceptual foundations, moving from a critique of techno-determinism, through the disconnect between funding and management realities, to a focus on managerial capacity as the critical mediating factor. The methodology section then outlines the critical realist approach and the document analysis framework designed to investigate the funding-capacity nexus. Subsequent findings and discussion chapters present the analysis, diagnosing specific mismatches and arguing for a reconceptualization of digital transformation as a fundamentally managerial and strategic challenge, rather than a purely technological one. The conclusion synthesises the argument for reorienting policy and practice towards building the durable organisational capacity required for meaningful transformation.

2 Related Work

2.1 Beyond Techno-Determinism: Reconceptualising Digitalisation as a Strategic Reform

Digitalisation in higher education has been in the midst of ubiquitous literature over the past few years, but has long been shadowed by a paradigm of techno-determinism which frames the

use of particular tools and instruments as a naturally evident stimulant for innovation and development (Selwyn, 2014). However, this perspective has proven to be both analytically and practically insufficient for understanding the conspicuously inconsistent results of implementing digital projects through the education industry. In this regard, critical counter-narratives has surfaced to contend that technology does not merely play the role of a neutral actor, but it is rather greatly immersed in larger intricate contexts, namely political, social and organizational ones , which calls for reconceptualizing digitalization from being a series of simple technical expenditures to a more complex and multifaceted process of institutional transformation and change (Fawns, 2022; Kirkwood & Price, 2014).

Contemporary scholarship characterises the aforementioned process into three distinct yet interconnected dimensions, namely strategic change, organisational change and human capital investment. First, as a form of strategic change, digitalisation does not only entail the endorsement and adoption of digital tools and platforms but necessitates a radical strategic realignment of higher education institutions' institutional mission, value proposition along with pedagogical philosophy. Indeed, effective digitalisation requires a fundamental restructuring and reframing of universities' educational goals in our evolving digital age rather than solely relying on digitising pre-existing administrative and instructional procedures (Bond et al., 2018; Czerniewicz, 2018), which completely restructures what universities offer, who they serve and the ways in which knowledge production, teaching and learning generate value. In this way, digitalisation can be viewed as a strategic tool that coerces higher education institutions to reconsider their identity and how they fit into the knowledge economy, which is essential to achieve meaningful educational change along with sustained institutional value.

Second, digitalisation tangles with a process of organisational change which requires deeper structural, cultural and procedural adjustment within higher education institutions that often challenge pre-existingly rooted hierarchies, workflows and traditional academic identities (JISC, 2020). Naturally, integrating digital and Artificial Intelligence (AI) based systems completely disrupts traditional and conventional divisions , delineating administrative functions from academic ones, which requires unaccustomed types of coordination, collaboration and decision-making. One can say that from a structural level perspective, digitalisation might stimulate the creation of new leadership roles and unfamiliar governance frameworks, whilst at the procedural level, major transformation in teaching, assessment and administrative processes is called for to adapt to data-driven and platform-based operations. Third and most importantly,

digitalisation embodies a human capital investment that is contingent upon the methodically sustained development of digital competencies among both academic staff and students, which is regarded as a foundational capacity building , as technologies by themselves cannot produce educational value unless meaningfully incorporated into teaching, learning, research, along with other management practices(Redecker & Punie, 2017).

From a managerial perspective, the only way to succeed in the former is to commit to long-term professional development through continuous trainings in digital pedagogy, workshops in data literacy and AI tools , while also creating institutional incentives for digital engagement. Taken as a whole, this triangular framework positions digitalisation as a fundamental concern amidst governance and management rather than minimising it to a technicality, thus shifting the discourse from which technologies to acquire to which identity higher education institutions aim to embody. However, an area of concern here would be that the funding mechanisms that facilitate digitalisation processes and managerial skills , and which are deemed necessary for significant change, continue to be under-theorised and inadequately connected in both academic research and policy discourse.

2.2 The Disconnect: Funding Models Versus Managerial Realities

If the claim contends that digitalisation is a strategic and organisational process, the funding mechanisms that enable it should be examined as more than just financial inputs but rather policy mechanisms that structure governance and either facilitate or restrict managerial agency. In this matter, our literature demonstrates primary funding models , all of which offer distinct and problematic ramifications regarding institutional management.

Public budgetary funding, for instance, is often critiqued for being inflexible as it is commonly based on historical line items, archival entries or rigid formulas which can heavily restrict managerial autonomy and lock higher education institutions into outdated operational models , thereby preventing leaders from strategically relocating resources in the support of emerging digital priorities or innovative pedagogies (Ziegele, 2018). On the other hand, competitive and performance-based funding , such as awards for digital innovation projects, encourages the projectivisation of digitalisation. According to Henderson et al. (2017), the aforementioned represents a model that incites short-term, siloed initiatives and significant administrative overhead , which runs the risk of prioritising easily measurable outputs over sustained educational transformation.

Another set of managerial conflicts is brought about by the expanding role of private funding, public-private partnerships (PPPs), EdTech partners, as well as outsourcing digital infrastructure that undoubtedly provides capital and also expertise ;however, it introduces governance issues with regard to data ownership, commercial accountability and academic integrity. As per Czerniewicz (2018), this paradigm has the potential to accelerate the transition from collegial, academic logics to market-oriented , contractual logics , which calls for management skills that many academic leaders lack. Congruent with the previous, international funding or donor funding can indeed propel digitalisation agendas yet poses serious sustainability challenges after the funding cycle ends, especially when it is in misalignment with core institutional priorities and could possibly leave higher education institutions with costly infrastructures they cannot maintain in the long-run. Therefore, our central argument contends that funding is not a neutral input, but a decisive governance mechanism that defines the very potential and essence of strategic management , especially when each funding model carries an underlying philosophy that could conflict with the intricate, long-term, and human-centred aspects of digital transformation as previously discussed.

2.3 The Mediating Factor: Managerial Capacity as the Missing Link

The literature identifies a consistent set of managerial skills and capacities that are viewed as necessary to navigate the complexities of this modern digitalised environment and convert financial resources into effective and sustainable outcomes, although these capacities are often presumed and not explicitly developed or supported by funding.

- Strategic Governance Capacity: It is often viewed as the ability to guarantee a genuine leadership commitment with a coherent vision while also integrating digitalisation ambitions within fundamental institutional strategies , and necessitates going beyond verbal support to make challenging strategic trade-offs and aligning academic missions with digital goals (Baratsits & Stöter, 2022).

- Financial and Resource Managerial Capacity: Achieving effective digital transformation calls for more sophisticated financial skills that go beyond basic budgeting , as traditional university finance departments are frequently poorly equipped to handle the transformation from capital expenditure (CAPEX) for infrastructure to sustainable operational expenditure (OPEX) for continuous maintenance, software licencing and most importantly , human support.

- Human Resource and Change Managerial Capacity: This possibly represents the most important yet underfunded capacity which entails developing systems for continuous professional development, developing significant incentives and rewards for engagement, and explicitly acknowledging digital pedagogy in tenure and promotion standards (Redecker & Punie, 2017) but it also involves coordinating across historically divided academic and administrative groups, cultivating a collaborative culture and also skilfully handling innate resistance to change, which can be tricky.

Therefore, the insufficient integration between funding models and management needs , rather than their identification in isolation, portrays the most crucial research need to be addressed. For instance, previous research mostly examines funding mechanisms within policy frameworks or looks at management challenges at the organisational level without sufficiently examining how these aspects correlate and interact. Consequently, little is known about how the design of funding models can either facilitate or hinder the growth of critical managerial capabilities, which produces a recurring pattern in higher education digitalisation that is seen as a persistent funding-management mismatch.

2.4 The Funding-Management Mismatch: Explaining Digitalisation Without Transformation

There is a widespread phenomenon of implementing digitalisation without transformation, where widespread adoption of technology fails to drive both strategic and pedagogical transformation and which can be explained by the persistent disparity connecting funding rationales, mechanisms and structures with the pragmatic concerns and practical realities of institutional management. In this regard, existing literature sheds light on several and persistent mismatches and structural incompatibilities that our paper addresses next. First and foremost, there is a long-standing disparity between infrastructure investment and human capital investment ,as significant capital is dedicated to hardware, software and digital platforms while staff trainings and pedagogical support are underfunded, which might hinder the development, mastery and integration of digital tools. This further emphasises how technology adoption is assumed to automatically lead to educational progress, completely ignoring resource-intensive education, experimentation and learning re-engineering, which are all necessary for effective implementation of digitalisation. As a result, digital technologies risk being underutilised or used in ways that mimic or replicate pre-established practices , thereby challenging

technologically deterministic assumptions that usually equate adoption with impact. Some scholars who oppose technological determinism have continually reiterated the aforementioned disparity by advancing the claim that without sustainable investment in people and practices, digitalisation is vulnerable to becoming a symbolic reform instead of a driver of educational change (Selwyn, 2011; Weller, 2020).

Second, there exists an obvious contradiction between short-term project funding and the long-term character of meaningful digital transformation in higher education, as many digital initiatives are funded by competitive, short-cycle grants that intend to provide immediate results , while significant change in education requires time, continuity, stability and long-term established infrastructures. It is true that project-based funding could foster experimentation and creativity , yet it frequently results in isolated experimental initiatives that are unstainable and difficult to explain once the funding period expires. Moreover, research that centers on the institutionalisation of blended learning displays how long-term commitment and continuous support are decisive elements of long-term integration , not short-term initiatives and temporary projects (Porter et al., 2014), which is why many higher education institutions invest in initiatives that fail to be embedded in everyday practice as those initiatives can neither be sustained nor scaled.

Third, an important mismatch frequently occurs at the level of centralised decision-making and decentralised implementation, as top-down funding decisions are sometimes made without the appropriate channels that facilitate and support contextualised application at the faculty level or department levels. In other words , and although centralised authorities do allocate resources and establish strategic priorities, the implementation responsibility falls to academics and managers who need to tailor digital projects to various discipline cultures , adapt to pedagogical requirements and take into account regional or national limitations. Pursuant to our discussion, previous studies on middle-out or hybrid approaches to academic change highlight the crucial role that these leaders are playing in putting institutional strategy into practice although funding mechanisms seldom enable or sufficiently support them in this position (Bennett & Lockyer, 2004) , which is why digitalisation initiatives may be hampered by a lack of ownership, uneven adoption and clear misalignment between institutional ambitions and habitual learning and teaching procedures. Ultimately, another grey area revolves around evaluation frameworks that tend to favour some technological indicators such as platform adoption rates, login frequencies or even the sheer number of digital courses over more intricate and challenging to quantify

metrics of educational quality, inclusion and pedagogical impact. So, performance measurements are often at cross purposes with the objectives of sustainable and significant digital transformation (Kirkwood & Price, 2014; Selwyn, 2015). This emphasis on quantitative and measurable outputs supports a compliance-oriented approach towards digitalisation, where success is evaluated through usage rather than by educational values. Taken as a whole, these misalignments could create several forms of systemic failure points that help explain why digital tools are often underused, why pedagogical innovation is restricted to a small number of driven individuals and especially why higher education institutions feel constantly behind the curve despite consistent and ongoing investment and innovation in digital technologies and the digitalisation of education.

3 METHODOLOGY

Our study uses a Critical Qualitative Document Analysis (CQDA), a systematic research method that interprets written, visual or physical documents to uncover underlying meaning, patterns and power dynamics, which serves our purpose to operationalise our beyond the toolbox claim. Furthermore, our methodological framework allows us to diagnose how policy documents regard and touch upon digital transformation, either being an instrumental process of technological procurement or a structural process of organisational change that is shaped by funding mechanisms and governance approaches. For that matter, CQDA is deemed suitable for our research as it effectively treats policy texts beyond being neutral descriptions but captures them as social artefacts that could enact specific logics and assumptions regarding transformation and change (Prior,2008). Our study, which is based on a critical realism philosophy, aims to identify different generative mechanisms, more especially the funding models and managerial capabilities that are deeply ingrained in policy discourse and which shape the likelihood of institutional reform (Bhaskar, 2008).

The use of CQDA in our research is explicitly diagnostic and comparative as it brings into analytical conversation Morocco's strategic policy documentation with regard to international standards-based frameworks, which provides room for moving beyond comparing Morocco's policies to idealistic standards; instead, our study uses international standards as theoretical and practical restorative measures that highlight several aspects of national policies that are either completely implicit, underspecified, or even disregarded.

Pursuant to our discussion, we constructed a purposive corpus of four documents as evidence of competing logics , as they were selected for their distinctive analytical functions and their ability to illuminate our central discussion in which our data selection process was driven by a number of criteria, namely scope of policy, thematic significance along with institutional authority. At the national level, the PACTE ESRI 2030 and Digital Morocco 2030 were both chosen as they represent Morocco's main strategic frameworks for digital transformation and higher education reform, while the OECD (2021) and UNESCO (2022) documents were selected at the international level for their normative and comparative significance in influencing standardised higher education and digital policy transformation. In this regard, our study prioritises analytical depth over exhaustiveness as it concentrates on reputable and representative documentation and discourse, which effectively illustrates the interplay between national policy objectives and international adherence to norms in the digital transformation of higher education.

The following table represents the documentation used for our analytical analysis, their type and source, and also their primary analytical function in Critical Qualitative Discourse Analysis.

Table 1. Dataset composition and Primary analytical function in CQDA

Document	Type & Source	Analytical Function
PACTE ESRI 2030: Architecture Strategique	National Sectoral Strategy, Morocco, public document.	This document serves as the primary policy text and embodies the official national funding logic, project architecture, along with implicit institutional implications and expectations for higher education and research.
Digital Morocco 2030: Institutional Brochure	National Cross-Sectoral Strategy, Morocco, public document.	This document reveals how Higher education agendas fit into larger techno-optimistic narratives and displays the pervasive national discourse that frames digitalisation as a lever for acceleration, modernisation and change.
OECD (2021): The State of Higher Education: One year into the Covid-19 Pandemic	International Policy Analysis, public document.	This document moves beyond tool-centric methods as it offers a standards-based corrective that specifically challenges institutional capability, sustainable funding and regards governance as a precondition for successful and effective digital transformation
UNESCO (2022): Guidance for Generative AI in Education and Research & Digital Learning for All	International Normative Framework, public document.	This document serves as a critical lens on governance and ethics, revealing blind spots pertaining to risk management, accountability, equality, equity and the human-centric aspects of technology integration.

The aforementioned represents a corpus of data that enables a systematic and structured comparison between instrumental digitalisation logic that focuses on tools and projects, and which is evident throughout Moroccan documentation, and a structural transformation

reasoning which prioritises discourse around funding , human capital and the construction or formation of managerial capacity that is explicitly articulated within international frameworks.

4 Results and Interpretation of Findings

4.1 The CQDA Process: A structured five-phase analysis

Our critical qualitative document analysis followed a five-phase procedure in order to guarantee analytical rigour and transparency and systematically progressed from initial descriptive coding to thematic organisation and interpretive analysis, ultimately enabling the identification of patterns , relationships, and causal mechanisms within our selected documents.

Phase 1: Analytical sensitisation to distinguish instrumental from structural discourses.

Initially, we conducted an immersive reading of all documents to sensitise the analysis to the dominant discourses, from which we distinguished two competing policy reasoning based on key linguistic and conceptual indicators summarised in the table below.

Table 2. Analysis of key competing policies' logic

Discourse Type	**Key Indicators**	**Examples**
Instrumental, toolbox digitalisation	Projects, platforms, equipment, infrastructure, acceleration, scaling, pilots, adoption rates.	“Levier accélérateur”, “plateformes d’enseignement en ligne”, “digitalisation avancée”, “modernisation”.
Structural Transformation	Governance, leadership, capability, sustained investment, institutional learning, accountability, workload, ethics, risk mitigation.	“Capacity-building”, “institutional responsibility”, “ecosystem”, “governance frameworks”, “recurrent costs”, “change management”.

This phase reveals a clear divergence in which international frameworks constantly emphasise the structural transformation discourse while Moroccan policy texts primarily operationalise instrumental and toolbox digitalisation.

Phase 2: Thematic Coding based on core determinants.

The second phase presents a deductive-inductive thematic analysis, which was performed using the NVivo software, where deductive codes were directly derived from our study's theoretical framework on Funding Models and Managerial Capacity, while inductive codes emerged from the texts themselves.

Table 3. Thematic coding of key themes and sample codes

Theme	Operational Definition	Sample Codes
Funding Temporality	It refers to the timeframe suggested for financial support, differentiating between long-term, recurring investment and short-term, project-based funding.	short-cycle grant, project-based, recurrent budget, sustained investment.
Funding Purpose	It regards the explicit or implicit funding objectives that distinguish between investments in technology infrastructure and those which focus on organisational or human capacities.	infrastructure investment, software procurement, training budget, leadership development.
Managerial Capacity	It references the skills, authority, and structures that are needed to lead and implement change.	institutional autonomy, coordination mechanism, digital leadership, decision-making authority.
Governance Density	It centers on the precision and robustness of supervision	monitoring & evaluation, risk management, ethical

	mechanisms, guidance and accountability.	framework, stakeholder accountability.
Transformation Depth	It highlights the suggested extent of the intended transformation, which ranges from superficial technological adoption to more profound organisational and educational reform.	pedagogical innovation, strategic alignment, cultural change, tool adoption.

Phase 3: Comparative Thematic Tables

Our Critical Qualitative Discourse Analysis relies upon comparative thematic tables as primary analytical tools , which synthesise our coded data from the four selected documents, which represents a cross-document juxtaposition which allows for the systematic identification of discursive convergences, omissions and conflicts.

Table 4. Funding Models highlighting project Logic vs Structural Investment

Dimension	**PACTE ESRI 2030**	**Digital Morocco 2030**	**OECD (2021) standards**	**UNESCO standards**
Funding Horizon	Project-based/ Strategic	Programmatic and highly linked to vision	Long-term/Recurrent	Sustainable funding models
Capacity Investment	Implicit, referred to as in 'capacitation'	Peripheral	Central/ Explicit	Core components of budgets
Risk-management	Absent	Absent	Explicitly addressed	Directly linked and integrated into governance

Our comparative thematic analysis clearly reveals a considerable discrepancy regarding the causal assumptions that govern funding tactics. For instance, Morocco's policy texts implicitly

consider that competitive, project-based funding would naturally drive institutional reform through the use of dissemination and replication, whereas international frameworks expressly warn of the threat that funding without ring-fenced investment in organisational and human capability may pose , especially when it can lead to superficial digitalisation, fragmented implementation and poor institutional learning. Consequently, our hypothesised causal mechanism displays that short-term financing mechanisms , along with a lack of persistent capacity in collaborative investment results in discontinuous adoption patterns while also restricting cumulative learning benefits to ultimately hinder sustainable digital change.

Table 5. Managerial Capacity as assumed readiness or constructed capability

Dimension	**PACTE ESRI 2030**	**Digital Morocco 2030**	**OECD (2021) standards**	**UNESCO guidelines**
Leadership Development	Generically mentioned	Absent	Central/ Structured programmes	Essential for ethical governance
Institutional Autonomy	Presumed as given	Presumed as given	Conditional on capability	Linked to accountability
Governance Structures	Generic governance 4.0	Generic digitalization	Detailed/ multi-level	Specific/ based on rights

Our comparative analysis demonstrates significant divergence in how managerial capacity is conceptualised across policy sectors on a national and international level. In fact, Morocco's policy documents primarily consider managerial competence as an assumed input that by default implies institutional readiness to lead and coordinate digital transformation regardless of its complex nature. In contrast, international frameworks regard managerial capacity as a step-by-step built process that must be intentionally produced, resourced, funded and sustained over time. Indeed, the assumption of managerial readiness in the face of technical and organisational complexity could lead to implementation bottlenecks, incoherent execution and leadership overload, thus limiting the effectiveness of digital transformation initiatives.

Phase 4: A critical Analysis of Silence and Presupposition in Morocco's policy texts

Applying Critical Qualitative Discourse Analysis, our study extensively examines the notions of silences, what is not worded; and assumptions, what is taken for granted (Bacchi, 2009)

Table 6. CQDA of forms of silence

Form of Silence	Significance	Exposition by contrast
No mention of failure scenarios or risk analysis	Morocco's policy discourse assumes a linear and successful implementation ,thus depoliticising the transformation process	International documents clearly emphasize risk assessment and adaptive or risk management
No discussion concerning academic or managerial workload	National data sources mask the real resources ,which are time allocation and cost of transformation ,and are both primary implementation barriers	International data sources focus on working conditions and sustainable transformation
No clear mention of trade-offs or opportunity costs regarding funding	National documentation presents digitalisation as a mère additive process ,not as a strategic reallocation one	International documentation analyses budgetary constraints and the need for prioritisation

Our analysis reveals that national strategies are based on the notion of optimistic managerialism , the belief that policy mandates would effectively be carried out via goodwill and intent, rather than institutional procedures that ought to be based on anticipation, absorption and mitigation strategies.

Phase 5: A synthesis constructing an explanatory model that moves from policy toolboxes to causal determinants

In the final phase, our analysis integrated all insights and findings previously discussed in preceding phases in order to construct a consistent explanatory model. What emerges from the

aforesaid embodies a technologically driven ambition that is rooted in a structurally limited approach for the effective digitalisation of higher education in Morocco. As it happens, our analysis highlights how the national strategy's reliance on project-based funding mechanisms ,combined with vague assumptions about managerial competence, determines how change is implemented in practice. Subsequently, this approach constitutes a threat to valuable and transformative institutional change , as it encourages a fragmented implementation in an instrumental trajectory, focusing on tool deployment rather than the consolidation of long-term organisational/managerial skills and practices.

5 THEORETICAL AND POLICY IMPLICATIONS

Our findings provide significant theoretical and practical implications that lie in the understanding of digital transformation in HE institutions, along with the design of policies that intend to promote and advance it.

5.1 THEORETICAL IMPLICATIONS

Our analysis further reinforces the very explanatory power that critical realism holds and thus effectively serves as a lens for policy analysis and interpretation in higher education scenarios. For instance, our study focuses on treating policy documents as more than mere descriptions of intent, but rather as evidence of underlying generative mechanisms , which demonstrate the nature of the structural properties pertaining to funding models and institutional managerial capacity and how these can shape national digitalisation efforts. Therefore, our study moves beyond the simplistic description of policy content towards qualitatively uncovering the existing causal logics that systematically help enable or constrain digital change, regardless of all institutional efforts or national ambitions.

Moreover, our study strives to make a conceptual contribution to the discourse revolving around the University 4.0, foregrounding the often under-discussed dimensions of institutional and governance models and capacity that determine whether such technologies can be effectively implemented and productively absorbed, or not. The aforementioned is achieved through highlighting that both notions of funding temporality and managerial capacity are primary determinants of transformation effectiveness and depth, thus reframing the University 4.0 as an institutional design challenge rather than just a technological procurement. Indeed, moving toward a futuristic, smart and digitalised university model is deemed to be distinguished less

by the sophistication of AI tools, but rather by the robustness of the chosen funding architecture, digital leadership and managerial competence.

5.2 Policy Implications

Our findings truly point to a clear imperative for funding reform, as the current reliance on project-based funding is deemed to be structurally misaligned with the long-term goals of effective change. Therefore, it is important to consider a subtle transition towards mixed-model funding architectures that promote several areas, especially when such projects provide competitive project funding with recurrent allocations dedicated to long-term digital capacity, system maintenance and also pedagogical development. Another point to discuss is this model's capacity to mitigate the precarious position some universities are left in when they are unable to sustain initiatives once the funding term concludes, and would therefore reaffirm digitalisation as a permanent institutional function rather than just a portfolio project.

In line with what has been previously stated, our study reveals an urgent need to invest in managerial and leadership capacity development, especially when connecting digitalisation to our local context. In fact, our analysis of policy documents displays that the local implementation of digitalisation operates on the assumption of institutional readiness by treating managerial competence as a ready input instead of an output that requires deliberate investment, which could be dangerous for the future steps towards a genuine 4.0 education industry in Morocco. Therefore, the allocation of national programs for digital leadership capacity-building should be established, focusing on management transformation, strategic digital governance and data-informed decision making, which we deem would be effective in addressing the critical missing stone between strategic ambition and reality.

It is also viewed as a necessity to work on strengthening accountability frameworks governing digital governance, as the current policy architecture is characterised by structural silence when it comes to risk management, mitigation plans, coordination and cooperation mechanisms, along with ethical oversight. It is thus recommended to develop a Digital Governance Framework that specifically draws clear lines of accountability regarding digital initiatives, provides protocols for inter- and intra- institutional coordination, and develops mechanisms for stakeholder participation. What has been previously discussed provides a framework that could help elevate discrete projects into coherent, accountable and sustainable transformation plans, which correlates with national ambitions.

At last, our policy document analysis reveals a critical gap of ethical considerations such as data governance, algorithmic transparency, digital inclusion and human agency, which all must be considered as structural pillars of digital strategy, not mere peripheral concerns**.** In line with this, concrete ethics mechanisms must be established, like the establishment of ethical review boards that can oversee digital initiatives and institutional training on digital rights. Ultimately , these implications and considerations call for a fundamental change in policy logic, including investing in structural approaches that make genuine and effective change possible, especially in terms of sustainable funding projects, managerial capacity building, robust governance models, and the oversight of ethical foundations. All in all, while grounded in the Moroccan context, our framework offers a template for any higher education system seeking to move beyond the toolbox toward a sustainable and effective digital transformation.

Finally, It is fundamentally important to underscore that our analysis of Moroccan higher education policy reflects context-dependent institutional trends and should not be considered as universally representative of the entire sector, especially when our results might not align with the diverse operational realities found across regions and institutions. While the analysis of our four policy documents projects a centralized and monolithic national vision, Morocco's institutional landscape is highly characterized by heterogeneity, as operational realities may vary. Therefore, digitalization is mediated by specific socio-technical resources such as institutional autonomy, international funding and digital readiness and could help accelerate the progress for a subset of institutions benefiting from these resources, while regionally smaller institutions may face more pronounced constraints, especially regarding funding access and managerial capacity. Accordingly, future research could pivot toward a qualitative investigation of institutional realities to examine the institutional dynamics at play and complement our current policy-based study. Leveraging the previous could allow for a more nuanced understanding of how diverse Moroccan universities and institutions navigate their digital transformation trajectories, thus capturing the picture of Moroccan higher education in its full spectrum.

6 CONCLUSION

Our study examines the digital transformation that the Moroccan higher education sector is undergoing, delving beyond its technological aspects and focusing on all structural determinants that hold the power to condition the efficacy and sustainability of its implementation. In order to achieve that aim, our study uses a Critical Qualitative Document Analysis (CQDA) to analyse different policy-based documents, namely PACTE ESRI 2030, Digital Morocco 2030, along with international governance and standards frameworks. In line with the former, and as Morocco's policy goals are embodied in digitalisation and standardisation of higher education with regard to international standards, it was deemed necessary to analyse both international and national documentation, which demonstrates that funding models and managerial capacity are both decisive mechanisms shaping digital change outcomes.

However, It is also important to acknowledge that our sample is limited and inherently restricts the generalizability of our findings; consequently, our interpretation of findings is seen as indicative rather than definitive. This limitation calls for future research to integrate qualitative methods, including semi-structured interviews with policymakers and institutional leaders at the core of decision-making, conduct comparative studies across different Moroccan universities, and perform systematic examinations of institutional administrative data. The adoption of a mixed-method approach, along with qualitative data from key samples, could validate the patterns identified in our research while also providing deeper insight into the variations in digitalisation implementation capacity, which our study lacks to fully capture.

Our findings reveal a clear structural discrepancy in Moroccan policy discourse, as it clearly articulates an ambitious and pioneering digital reform vision, yet it remains functionally limited by choosing a project-based funding rationale and conveying unstated premises of national institutional readiness for digitalisation. Therefore, it is significant to observe that national discourse often frames digitalisation as a mere toolbox including generative AI platforms, limited projects and technological upgrades, while international discourse conceptualises the very notion of digitalisation as a permanent organisational change that requires sustained investment, governance density and leadership capacity building.

From a critical realist perspective, the aforementioned reflects a misalignment that could help the potential risks for digital initiatives to remain fragmented and weakly institutionalised. For

instance, the national plan adopts short-term, project-based funding that truly propels rapid adoption of digitalisation but subverts organisational development and resilience. By the same token, the assumption of managerial capacity and readiness without providing systematised investment in leadership capacities, coordination approaches, and standardised governance structures , creates real obstructions to implementation that cannot be resolved through investing in technology alone.

Our study systematically contributes to higher education policy analysis, as it uses international standards as an interpretive lens and CQDA as a valuable tool that diagnoses and demonstrates the underlying arrangements that are embedded in national and international policy documents, thus enabling the effective identification of possible causal mechanisms that shape the implementation outcomes of digitalisation. At the conceptual level, our study further advances the notion of the University 4.0 discourse through the repositioning of funding and governance as the core drivers of efficient and sustainable digital transformation, not just as tools and platforms.

Morocco , as a case study, also serves as an example for higher education systems in comparable contexts and provides an insightful understanding of the effective implementation of digitalisation reforms. In the main, we can conclude that digital change strategies that accentuate visibility, acceleration and technological deployment over clearly defining funding sustainability approaches and managerial capacity development, risk producing superficial adherence rather than genuine institutional change. Therefore, moving beyond the toolbox requires a clearly defined strategic reorientation toward more capacity-oriented and sustainable funding models, leadership and governance capacity development and the integration of ethical and accountability frameworks as systemic components of digitalisation.

On an ending note, future research could extend our proposed policy analysis by examining implementation practices, leadership experiences and budgetary trajectories at the institutional level to empirically test the causal mechanisms identified in our study. However, our study offers a robust analytical foundation for reimagining the implementation of genuine digital transformation in higher education as a structural, organisational and governance challenge.

REFERENCES

Bacchi, C. 2009. *Analysing policy: What's the problem represented to be?*. Frenchs Forest, NSW: Pearson Education.

Baratsits, J., & Stöter, J. 2022. From digitalization to digital transformation: How universities can cope with the challenge. *Beiträge Zur Hochschulforschung*, 44(1): 42-62.

Bennett, S., & Lockyer, L. 2004. Becoming an online teacher: Adapting to a changed environment for teaching and learning in higher education. *Educational Media International*, 41(3): 231–248.

Bhaskar, R. 2008. *A realist theory of science*. London, UK: Verso.

Bond, M., Marin, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. 2018. Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(1): 48.

Czerniewicz, L. 2018. Unbundling and rebundling higher education in an age of inequality. *Educause Review*, 53(6): 10-24.

Fawns, T. 2022. An entangled pedagogy: Looking beyond the pedagogy—technology dichotomy. *Postdigital Science and Education*, 4(3): 711–728.

Henderson, M., Selwyn, N., & Aston, R. 2017. What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Studies in Higher Education*, 42(8): 1567-1579.

Jisc. 2020. Building digital capability: The six elements defined. [Online] Available: https://www.jisc.ac.uk/ (April 15, 2023)

Kirkwood, A., & Price, L. 2014. Technology-enhanced learning and teaching in higher education: what is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology*, 39(1): 6–36.

Ministère de l'Enseignement Supérieur, de la Recherche Scientifique et de l'Innovation. 2022. *PACTE ESRI 2030: Architecture Stratégique*. Rabat: Royaume du Maroc.

Ministère délégué auprès du Chef du Gouvernement chargé de la Transition Numérique et de la Réforme de l'Administration. 2024. *Digital Morocco 2030: Institutional Brochure*. Rabat: Royaume du Maroc.

OECD. 2021. *The State of Higher Education: One year into the Covid-19 Pandemic*. Paris: OECD Publishing.

Porter, W. W., Graham, C. R., Spring, K. A., & Welch, K. R. 2014. Blended learning in higher education: Institutional adoption and implementation. *Computers & Education*, 75: 185–195.

Prior, L. 2008. Using documents in social research. In *The SAGE Handbook of Social Research Methods*: 128-143. London, UK: SAGE Publications.

Selwyn, N. 2011. *Education and technology: Key issues and debates*. London, UK: Continuum.

Selwyn, N. 2014. *Digital technology and the contemporary university: Degrees of digitization*. London, UK: Routledge.

Selwyn, N. 2015. Data entry: Towards the critical study of digital data and education. *Learning, Media and Technology*, 40(1): 64–82.

UNESCO. 2022. *Guidance for generative AI in education and research*. Paris: UNESCO.

Weller, M. 2020. *25 years of ed tech*. Edmonton, AB: Athabasca University Press.

Ziegele, F. 2018. Multidimensional ranking and transparency tools for steering. In *Research Handbook on Quality, Performance and Accountability in Higher Education*: 203-218. Cheltenham, UK: Edward Elgar Publishing.

Redecker, C., & Punie, Y. 2017. European Framework for the Digital Competence of Educators: DigCompEdu. [Online] Available: https://publications.jrc.ec.europa.eu/ (May 20, 2023)