

Review

A Review of Maturity Models Engaging Quality Culture in Higher Education

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Abstract

Maturity models are widely used to guide institutional development in higher education. However, applying maturity models to quality culture, a relational, contested, and contextually embedded construct, raises unresolved conceptual and methodological concerns, notably how well a staged, standardizing logic can capture a construct of this kind. This paper critically reviews how maturity models conceptualize, operationalize, and apply quality culture in higher education. Seven distinct maturity models, documented across eight sources, including one doctoral thesis, were identified through searches in five major databases and analyzed against four dimensions: architectural structure, theoretical foundations, treatment of quality culture, and reported applications and limitations. The analysis distinguishes models that position quality culture as a central construct from those that incorporate it as a dimension, mediating factor, or supporting component within broader institutional, technological, or managerial frameworks, and shows that this positional difference governs what institutional inquiry each model can support. Recurring themes across the models include leadership, stakeholder engagement, continuous improvement, and feedback mechanisms. Recurring limitations include reliance on linear stage-based progressions, limited grounding in organizational and cultural theory, and insufficient sensitivity to institutional context.

Keywords: quality culture; higher education; maturity models; quality assurance; organizational development

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1. Introduction

Higher education institutions have increasingly adopted managerial approaches originally developed in the business and industrial sectors, in response to rising demands for accountability, efficiency, international competitiveness, and quality assurance. This trend, often referred to as the “managerial turn” in higher education, has brought with it a proliferation of frameworks such as strategic planning, total quality management, benchmarking, and performance metrics (Al Mahameed et al., 2024; Deem, 1998; Morley, 2024; Sauder & Espeland, 2009). Among the diverse array of imported managerial instruments, maturity models have emerged as particularly influential. Originally developed to

guide software process improvement through the Capability Maturity Model (CMM) and its successor, the Capability Maturity Model Integration (CMMI), they offer a structured, staged framework for assessing and guiding organizational development. Their spread through higher education is sustained not only by their analytical appeal but by an external apparatus of accreditation regimes, international rankings, and performance-based funding that rewards instruments capable of producing comparable, audit-ready outputs, a connection this review develops in the Discussion.

1.1. Conceptual Foundations of Maturity Models

Understanding the historical development of maturity models helps contextualize their current relevance in organizational and digital transformation efforts (Mettler & Rohner, 2009; Mettler et al., 2010; Szelągowski & Berniak-Woźny, 2022). Their conceptual foundations lie in design science, which enables them to serve both diagnostic and prescriptive functions: assessing current capabilities while identifying pathways for improvement (Fraser et al., 2002). The notion of maturity, in turn, signals the degree to which institutional processes, personnel, or outputs are formalized, standardized, and systematically enhanced over time (Mettler & Rohner, 2009; Paulk et al., 1993). Structurally, maturity models commonly consist of three to six hierarchical levels, organized around assessment dimensions such as process, people, and technology, with each level defined by detailed criteria that enable evaluation and benchmarking (Fraser et al., 2002). The Capability Maturity Model, developed at the Software Engineering Institute and formalized in the early 1990s, established the five-level sequence Initial, Repeatable, Defined, Managed, and Optimizing that has shaped maturity-model thinking ever since (Paulk et al., 1993). Its successor, the CMMI, extended this logic into additional domains, including project management, service delivery, and higher education. The tradition has continued to evolve in recent years, with subsequent work refining maturity-model methodology for digital transformation in business process management (Szelągowski & Berniak-Woźny, 2022), for capability assessment across higher education domains, including active learning and micro-credentialing (Garbin et al., 2022; Iatrellis et al., 2024), and for the evaluation of digital transformation across manufacturing industries (Han et al., 2023; Ünlü et al., 2024), indicating that the foundational architecture remains generative across diverse contemporary application domains.

Two features of this tradition are consequential for the present review because they influence how maturity models are applied and their limitations. The first is the assumption that institutional development can be specified, sequenced, and assessed through staged criteria, an assumption inherited directly from the software engineering processes for which the CMM was originally designed. The second is the assumption that progression through these stages can be standardized across institutional contexts, with the model functioning as a portable diagnostic and prescriptive instrument. Both assumptions sit comfortably with procedural domains characterized by repeatable activities, codifiable practices, and clear criteria for what counts as more or less mature performance. Both become more difficult to sustain when applied to domains that are relational, contested, and contextually embedded.

1.2. Maturity Models in Higher Education

Higher education institutions have adopted maturity models to evaluate and enhance capabilities across digital transformation, academic services, quality assurance, curriculum design, and organizational change. However, despite this growing uptake, the models themselves remain under-examined in terms of their theoretical underpinnings, cultural applicability, and contextual fit, particularly when applied to socially embedded concepts such as quality culture. Existing reviews of the field have documented the

breadth of application across teaching, student monitoring, academic services, strategic planning, IT governance, accessibility, and education for Society (Auer et al., 2023; Carvalho et al., 2020; Duarte & Martins, 2013; Laura Icela et al., 2023; Tocto-Cano et al., 2020), and have provided critical insights into implementation challenges faced when generic frameworks are adapted for university settings. More recent contributions have focused on applying maturity models within specific institutional domains, such as active learning environments (Garbin et al., 2022), learning analytics integration via enterprise-architecture-aligned frameworks (Macfadyen, 2022; Šimić et al., 2025), and supporting organizational maturity-model design through generic capability models (Merkus et al., 2020). However, this growing body of work also reveals two recurring limitations that frame the analytical concern of the present review. The first is the tendency toward conceptual fragmentation: many models are confined to narrow functional domains and rarely adopt a holistic, system-wide perspective. The second is a persistent asymmetry between specification and guidance. Models in this tradition tend to articulate clearly what institutions should achieve at each level of maturity. However, they offer comparatively little on how such progression is to be enacted in practice. These analytical gaps are further compounded by limited empirical validation and underreported methodological foundations, which together constrain the field's cumulative development (Carvalho et al., 2020; Macfadyen, 2022; Tocto-Cano et al., 2020). The implications of these limitations become especially consequential when maturity models are extended into domains that depend less on procedural standardization than on shared values, professional judgment, and collegial engagement, precisely the territory occupied by quality culture.

1.3. Quality Culture in Higher Education

Quality culture has garnered ongoing attention in higher education over the past two decades because fostering a shared commitment to quality is essential for inspiring purpose and engagement among institutional actors. The European University Association (2006) defined quality culture as a collective, shared commitment to quality shaped by institutional values and practices alongside external quality assurance frameworks. Unlike compliance-based systems, quality culture foregrounds the integration of shared norms, leadership practices, collegial dialogue, and a developmental orientation toward the continuous enhancement of teaching, research, and administration (Harvey & Stensaker, 2008; Legemaate et al., 2022; Newton, 2002). Scholars typically conceptualize quality culture along two dimensions: a structural dimension consisting of formal quality assurance processes, tools, and policies; and a cultural dimension encompassing trust, shared values, and collegial engagement. An effective quality culture depends on a dynamic interplay between the two, in which procedural mechanisms support rather than replace academic ownership and professional responsibility for quality (Greere & Riley, 2024; Harvey & Stensaker, 2008; Legemaate et al., 2022; Verschueren et al., 2023; Westerheijden et al., 2007). Empirical research has examined quality culture through surveys, case studies, and institutional self-assessments, focusing on how leadership, communication, and participatory practices foster environments in which quality becomes a shared responsibility rather than an externally imposed obligation. This body of work has consistently identified ongoing dialogue and collegial engagement as central to the substantive enactment of quality culture, signaling that academic staff participation is not peripheral but constitutive of the institutional conditions through which quality is produced (Bendermacher et al., 2017, 2019; Ehlers, 2009; Greere & Riley, 2024; Mandefro et al., 2026; Newton, 2002; Verschueren et al., 2023). Institutions with strong quality cultures combine transparent governance structures with an embedded ethos of continuous improvement, sustained through ongoing dialogue between management and academic staff (European University Association, 2006; Nygren-Landgärds et al., 2024; Vettori,

2012). At the same time, considerable variation persists across contexts: some institutions develop holistic, dialogue-based approaches, while others remain caught in compliance-driven routines that hinder genuine cultural transformation (Bohrer, 2011; Cheng, 2017). Studies from outside Europe have similarly shown that without sustained engagement at all institutional levels, externally introduced quality frameworks tend to produce procedural compliance rather than embedded change (Mohd Ali & Borhandden Musah, 2012; Sultan & Wong, 2019). Recent scholarship has further documented how this tension between procedural compliance and substantive cultural change has intensified under contemporary accountability regimes, with thirty years of evidence suggesting that quality assurance has moved progressively from collegial, enhancement-oriented practice toward externally driven audit and verification (Harvey, 2024), and with growing critical attention to how accreditation requirements constrain the pedagogical and curricular dimensions of academic practice (Romanowski & Karkouti, 2024). Quality culture is relational, contingent, and historically situated, which complicates the application of maturity models, which were originally developed to assess processes that are formal, repeatable, and amenable to standardization. The general intuition that procedural maturity logic sits uneasily with the relational and contested character of quality culture has been articulated by Harvey and Stensaker (2008), Newton (2002), and Cheng (2017), and the present review draws on and extends this scholarship. What this review adds to that conversation is the systematic identification and synthesis of the body of maturity-model instruments that engage quality culture explicitly across European, Latin American, Middle Eastern, and Asian contexts, the development of an analytical distinction between models that theorize quality culture as a central construct and those that invoke it as a contributing dimension within broader institutional or technological frameworks, and the situating of these architectural patterns within the political economy of contemporary quality assurance. The analytical work of the review is therefore not the restatement of an established critique but the application of that critique to a defined corpus of instruments, with the analytical implications that follow from that application.

This paper therefore offers a structured critical review and thematic synthesis of the literature on maturity models applied to quality culture in higher education. It addresses three guiding questions: how are these models architecturally structured; what theoretical assumptions do they embed; and what purposes do they articulate, and what limitations do they carry, when applied to the conditions under which quality cultures actually develop? The concern that procedural maturity logic sits poorly with the relational and contested character of quality culture is well established in the literature (Cheng, 2017; Harvey & Stensaker, 2008; Newton, 2002); the contribution of this review lies not in restating that concern but in applying it systematically to a defined corpus of instruments. The central argument advanced here is that maturity models do not engage with quality culture uniformly, and these differences are consequential. The conceptual position assigned to quality culture within a model, whether a central construct, a structural dimension, or an antecedent variable, shapes the logic of institutional self-assessment, development, and quality assurance that the model can authorize. A model that theorizes quality culture as a central construct grounded in shared values, professional judgment, and collegial engagement supports a different kind of institutional thinking than one that treats culture as one dimension within a broader managerial, technological, or governance framework. The review therefore offers not only a mapping of seven instruments but an analysis of what kinds of institutional conversation, reflection, and development each model is equipped to support.

2. Methodology

2.1. Review Approach

This study was conducted as a structured critical review with thematic synthesis (Grant & Booth, 2009; Torraco, 2005). A critical review was preferred over a full systematic review because the models that explicitly engage quality culture in higher education differ markedly in their conceptual treatment of the construct and in their methodological foundations, and they are too few to support the formal aggregation logic that systematic reviews require. Under these conditions, the analytical and interpretive emphasis of a critical review is more appropriate than the aggregative logic of a systematic review (Grant & Booth, 2009; Snyder, 2019; Thomas & Harden, 2008). The search and selection process is reported in line with the PRISMA 2020 statement (Page et al., 2021). Although PRISMA was developed for systematic reviews, its flow diagram is widely used as a transparency tool in review types that do not follow the full systematic-review protocol, including integrative and structured critical reviews (Sarkis-Onofre et al., 2021; Snyder, 2019). Here the flow diagram reports the search and selection process only; it is not used as a methodological framework, and the review does not claim compliance with the defining requirements of a systematic review, such as protocol pre-registration, dual independent screening across all records, or formal aggregation of effect estimates. The diagram is retained because it communicates the funneling of records from identification to inclusion more clearly than narrative description alone, and the note beneath Figure 1 states explicitly that it serves a reporting function rather than signaling systematic-review status. Thematic synthesis, informed by Braun and Clarke's (2006) reflexive thematic analysis, was used to identify the cross-cutting patterns, conceptual tensions, and structural features carried into the synthesis. This approach suits a literature that remains fragmented across quality assurance, organizational learning, and institutional culture (Boell & Cecez-Kecmanovic, 2015): a structured interpretive synthesis consolidates existing approaches while exposing the conceptual and methodological gaps that warrant further inquiry.

2.2. Search Strategy

The literature search was conducted between November 2025 and March 2026 across five major academic databases: Scopus, Web of Science, ERIC, EBSCO, and Google Scholar, selected to mitigate database bias and to capture both the peer-reviewed and grey literature, including dissertations and conference proceedings (Gough et al., 2017). The search string combined Boolean operators with three concept blocks: ("maturity model" OR "stage model" OR "capability model") AND ("quality culture" OR "organizational culture") AND ("higher education" OR "university" OR "college"). The search was restricted to English-language publications, with no restrictions on publication year, so that both early conceptual works and recent developments could be included. Seven distinct maturity models met the eligibility criteria specified in Section 2.3 and were retained for thematic synthesis. In chronological order of publication, these are: the Quality Culture Typology of Harvey and Stensaker (2008); the Quality Maturity Model of Wilson (2013, 2015); the Maturity Model for Peruvian Universities (MMU-PER) of Tocto-Cano et al. (2020); the Maturity Matrix Model of Verschueren et al. (2023); the Knowledge Management Maturity Model of Herminingsih and Ratnasari (2024); the Quality 4.0 Maturity Scale of Alzahrani et al. (2025) and the Higher Education Learning Analytics Capability Maturity Model (HELA-CMM) of Šimić et al. (2025). Of these, six are published in journals indexed in Scopus and/or Web of Science, the majority in Q1 venues; one further model is documented across a doctoral thesis and a subsequent peer-reviewed journal article; and one is published in a regional, non-indexed open-access journal. The decision to include a peer-reviewed source beyond Scopus and Web of Science was deliberate. Quality culture

is an actively developing research area, and several recent maturity models grounded in Asian, Latin American, and Middle Eastern higher education contexts have begun to appear in regional or emerging open-access journals that are not yet indexed in the major citation databases. Including these sources broadens the review's scope and mitigates geographic bias, ensuring regional innovations are represented. All sources, regardless of indexing status, were screened against the same eligibility criteria, and the included regional source was assessed for conceptual coherence and methodological transparency before retention.

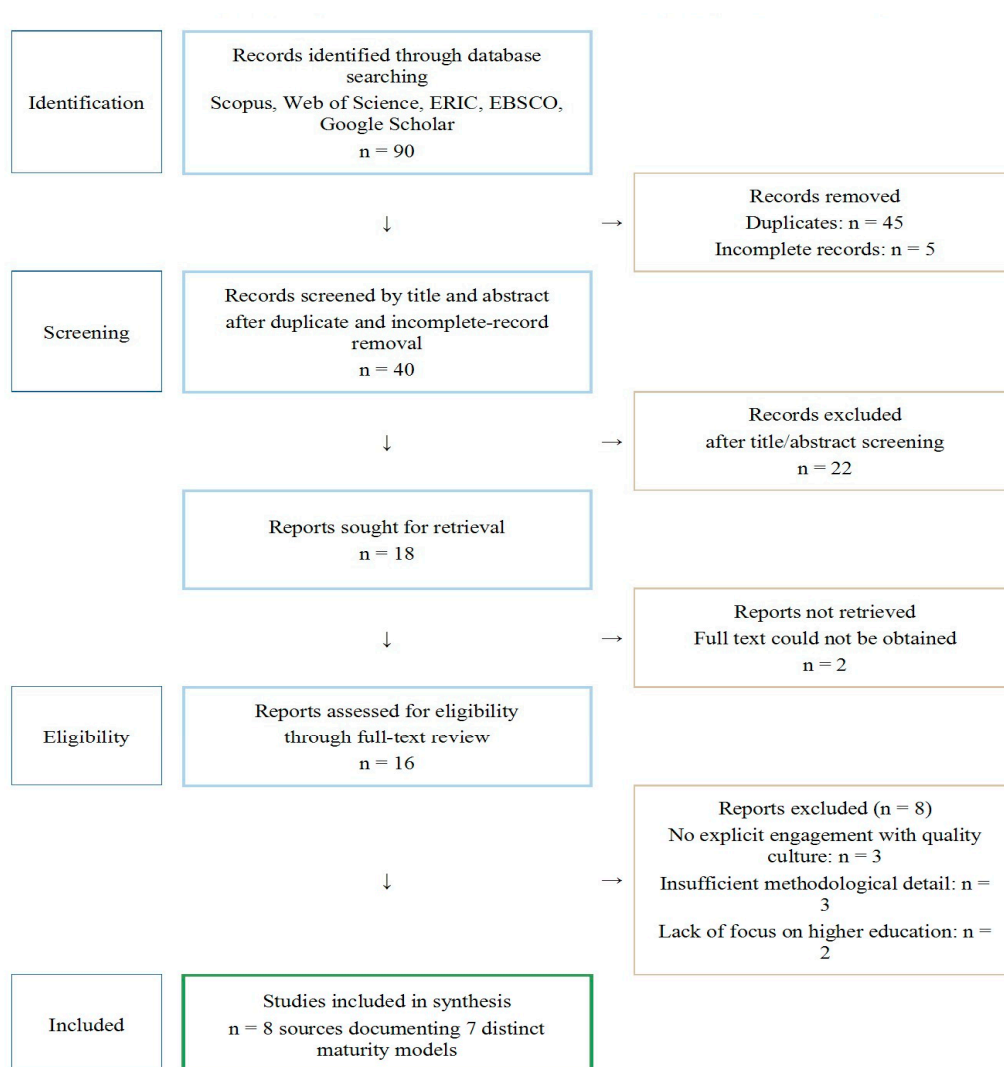


Figure 1. PRISMA 2020 Flow Diagram. Identification, screening, eligibility, and inclusion of maturity models engaging quality culture in higher education. **Note.** The PRISMA 2020 flow diagram (Page et al., 2021) is used here as a reporting tool for transparency in the search and selection process. It is not used as a methodological framework, and the present review does not claim compliance with the broader requirements of systematic reviews, such as protocol pre-registration, dual independent screening, or formal aggregation of effect estimates. The diagram makes the funneling of records from identification to inclusion visible to the reader.

2.3. Eligibility Criteria

Inclusion required that a source (a) presented or analyzed a maturity model applicable to higher education, (b) engaged explicitly with quality culture as a core construct,

structural dimension, or supporting component, and (c) was published as a peer-reviewed journal article, doctoral thesis, or validated conceptual paper. Sources were excluded if they (a) addressed maturity models in non-higher-education sectors without educational adaptation, (b) focused solely on software development or information technology maturity without reference to quality culture, or (c) referred to “culture” only in a generic organizational sense unconnected to the quality culture literature. These criteria were established before screening to ensure conceptual alignment and methodological robustness (Petticrew & Roberts, 2006). One retained source (Herminingsih & Ratnasari, 2024) meets the quality culture and higher education criteria but departs from the staged-architecture convention of the maturity-model tradition; it is included and analyzed as a boundary case for the reasons set out in Section 2.10.

2.4. Selection Process

A total of 90 records were identified through the database searches. Following the removal of 45 duplicates and 5 records marked as incomplete, 40 records were screened by title and abstract, of which 22 were excluded as falling outside the eligibility criteria set out in Section 2.3. Eighteen reports were then sought for retrieval, of which 2 could not be obtained in full text, leaving 16 reports for full-text assessment. A further 8 reports were excluded at this stage: 3 showed no explicit engagement with quality culture, 3 lacked sufficient methodological detail, and 2 fell outside the higher education context. Eight studies, representing seven distinct maturity models, were included in the final thematic synthesis. To address the risk of selection bias during the screening of 90 records in 8 included studies, several procedures were adopted. Inclusion and exclusion criteria were defined explicitly before screening commenced (Section 2.3) and applied consistently throughout. Reasons for exclusion were documented for every record assessed at the full-text stage and are available from the corresponding author on request. The lead author conducted the primary screening against the inclusion criteria in two passes separated by a two-week interval. Records whose eligibility remained uncertain after these passes were flagged as borderline, that is, records whose engagement with quality culture, applicability to higher education, or status as a maturity model could not be determined with confidence from the title and abstract alone, or for which the two passes returned inconsistent judgments. The two co-authors then reviewed these borderline records, and the judgments were compared and discussed until a consistent inclusion decision was reached. Records whose eligibility was unambiguous were screened once against the same criteria. These procedures provided a structured basis for the screening decisions reported in Figure 1, in line with PRISMA 2020 principles for transparency (Page et al., 2021).

2.5. Quality and Conceptual Appraisal

Given the heterogeneous nature of the included sources, which combined empirical studies, validated conceptual models, and theoretical typologies, the formal application of a single appraisal instrument was not appropriate. Instead, each included source was assessed against a structured appraisal grid developed for this review, capturing four criteria: clarity of the model's purpose and scope; transparency of the model's development process; explicit engagement with quality culture as defined in the higher education literature; and evidence of conceptual or empirical validation. This conceptually oriented appraisal is consistent with established practice in critical and integrative reviews where included sources differ in design and purpose (Torraco, 2005; Whitemore & Knafl, 2005).

2.6. Data Extraction and Synthesis

Data were extracted into a structured matrix capturing eight categories aligned with the review's analytical concerns: (a) model purpose and context; (b) theoretical lineage,

distinguishing design science maturity-model traditions from quality culture theory traditions and noting models that draw on neither; (c) number and nature of stages or levels; (d) key dimensions or domains; (e) how the model positions quality culture within its overall framework; (f) application or validation methods; (g) reported purposes and institutional applications; and (h) reported strengths and limitations, as identified by the models' developers and through the present analysis. Iterative coding (Braun & Clarke, 2006) was applied to identify cross-cutting themes, with codes consolidated into the analytical categories that structure the synthesis presented in the next section. Sources that referenced "culture" in a generic organizational sense without an explicit link to the quality culture literature had already been excluded at the screening stage in accordance with the eligibility criteria specified in Section 2.3.

2.7. Methodological Limitations

Three limitations of the review approach bound the analysis presented here. First, formal dual independent screening across all 90 records was not undertaken. As described in Section 2.4, the lead author conducted the primary screening, and the two co-authors reviewed the subset of borderline records. While this procedure provided a structured basis for inclusion decisions, it does not substitute for full dual-independent screening, and the possibility of selection bias cannot be entirely ruled out. Second, the search was restricted to English-language publications. While scholars from Asia, Latin America, and the Middle East increasingly publish maturity-model and quality culture research in English-language peer-reviewed journals, three of the seven included models are authored by researchers based in these regions and published in English (Alzahrani et al., 2025; Herminingsih & Ratnasari, 2024; Tocto-Cano et al., 2020). This does not offset the systematic exclusion of scholarship published in Spanish, Portuguese, Arabic, Mandarin, and other languages in regional journals oriented toward domestic rather than international audiences. This exclusion is unlikely to be neutral. Researchers and institutions that publish in English tend to be those already oriented toward international visibility, and the models that reach English-language journals may therefore over-represent internationally facing, frequently Western-aligned institutions, while under-representing the more locally embedded quality culture practices of institutions whose scholarship circulates primarily in regional languages. The corpus assembled here should be read with this skew in mind, and future reviews would benefit from multilingual search strategies that can capture regional scholarship in its original languages. Third, although five databases were searched and grey literature was included through a doctoral thesis (Wilson, 2013), publication bias toward indexed peer-reviewed work cannot be fully discounted. These limitations should be borne in mind when interpreting the synthesis that follows.

2.8. Thematic Analysis and Synthesis of Models

This section presents the thematic synthesis of the seven maturity models retained for analysis. The synthesis is organized around four analytical concerns derived from the central argument and the guiding questions stated in the Introduction: how each model conceptualizes quality culture; what theoretical foundations it draws on; how it is architecturally structured; and what purposes and applications it articulates. Section 2.9 begins with a comparative overview of the corpus, after which each of the four concerns is taken up in turn.

2.9. Overview of the Included Models

Table 1 summarizes the seven maturity models retained for synthesis. Beyond the descriptive features of each model, the table introduces two analytical columns that carry the central argument of this review. The Status of Quality Culture column locates each

model along the three positional categories advanced in the Introduction: central construct, structural dimension, or antecedent variable. The Logic of Use column identifies the institutional purposes each model is equipped to support. The models encompass theoretical, conceptual, and empirically validated approaches from diverse higher education contexts across Europe, Latin America, the Middle East, and Asia. The analytical categorization of the seven retained models was constructed using explicit criteria defined before assignment commenced. Each model was assessed against a single primary criterion: whether quality culture is treated as the central object of theoretical specification within the model, or as one dimension within a broader institutional or technological framework. This primary criterion was supplemented by two secondary indicators: the proportion of the model's analytical attention devoted to quality culture relative to other constructs, and whether the model's developmental scheme is explicitly built around the dimensions of quality culture. The placement of each model was documented with supporting evidence from the source text, and borderline cases were reviewed and discussed among the authors. The criteria are made transparent here so that readers can apply them and verify or contest the placement of any model.

Table 1. Overview of the seven maturity models engaging quality culture in higher education.

#	Model and Source	Type of Object	Primary Focus	Maturity Architecture	Status of Quality Culture	Logic of Use
1	<i>Quality Culture Typology</i> Harvey and Stensaker (2008)	Theoretical typology	Theoretical clarification of quality culture	Four ideal types (responsive, reactive, regenerative, reproductive); no developmental hierarchy	Central construct; theorized through Cultural Theory as emergent and contextually situated	Interpretive
2	<i>Quality Maturity Model</i> Wilson (2013, 2015)	Doctoral thesis with subsequent journal article; diagnostic instrument	Quality culture in academic libraries	Five levels (Ad hoc to Continuous); eight facets across two clusters (organizational and operational)	Central construct; treated as both product and process of organizational maturation	Instrumental
3	<i>Maturity Model for Peruvian Universities (MMU-PER)</i> Tocto-Cano et al. (2020)	Empirically validated diagnostic instrument	Holistic institutional quality assessment	Five levels (Emerging to Adaptive); thirty-nine variables across fourteen components	Structural dimension; component within the Favorable Governance dimension	Instrumental
4	<i>Maturity Matrix Model</i> Verschueren et al. (2023)	Empirically piloted diagnostic instrument	Direct assessment and development of quality culture	Four archetypes (Dysfunctional to Integrated); eleven dimensions across three groups	Central construct; integrating formal structures, human dynamics, and connecting elements	Instrumental and interpretive

5	Knowledge Management Maturity Model Herminingsih and Ratnasari (2024)	Causal-pathway framework (<i>boundary case; no staged architecture</i>) tested through structural equation modeling	Knowledge management maturity in higher education	No staged levels; causal-pathway model tested through SEM with 149 academic staff	Antecedent variable; indirectly linked to KM maturity through HRM practices (no direct effect found)	Explanatory (causal; boundary case)
6	Quality 4.0 Maturity Scale (Q4.0-MS) Alzahrani et al. (2025)	Empirically validated scale	Digital transformation of quality management	Five levels (Initial Quality to Quality 4.0); ninety-five practices across eleven axes in three dimensions (People, Process, Technology)	Structural dimension; one axis (Culture) within the People dimension	Instrumental
7	HELA-CMM Šimić et al. (2025)	Capability framework (model under continued development)	Learning analytics adoption in higher education	Five-level structure; twenty-eight capabilities across eight categories	Structural dimension; the 'Culture' category (one of eight) addresses institutional culture surrounding learning analytics adoption	Instrumental

Note. Models are listed in chronological order of publication. Wilson (2013, 2015) refers to the Quality Maturity Model documented across the Brunel University doctoral thesis published in 2013 and the subsequent peer-reviewed journal article in *Library Management* and published in 2015. **Type of Object** indicates the methodological character of each contribution, ranging from theoretical typology to empirically validated instrument. The column makes the heterogeneity of the corpus visible and treats this heterogeneity as analytically productive rather than as a methodological limitation requiring standardization. **Status of Quality Culture** describes the conceptual position each model assigns to quality culture: *central construct* denotes models in which quality culture is the primary object of analysis; *structural dimension* denotes models in which quality culture is one component within a broader institutional or technological framework; and *antecedent variable* denotes a causal-pathway position in which quality culture functions as a driving or mediating construct rather than as a developmental object. **Logic of Use:** where each model sits on the spectrum from instrumental to interpretive purpose. Instrumental use covers diagnostic assessment of current state, developmental guidance toward higher stages, and comparison across institutions; interpretive use covers conceptual analysis and dialogical reflection that resist quantification. The Knowledge Management Maturity Model is explanatory rather than instrumental or interpretive, seeking to model quality culture as a cause, and is treated as a boundary case (see Section 2.10). Most models combine more than one purpose; the labels indicate primary orientation rather than exclusive function.

2.10. Conceptualization of Quality Culture

The categorization of the seven models into the analytical positions developed in this section was based on whether each model treats quality culture as the central object of theoretical specification, as one dimension within a broader institutional or technological framework, or as an antecedent variable in a causal pathway. How quality culture is

positioned within a model is the most consequential decision its developers make, because that position determines what the model can analyze and what it must take for granted. Each position carries its own analytical commitments and blind spots. At one end, quality culture is treated as the central object of analysis. The Quality Culture Typology (Harvey & Stensaker, 2008) takes this furthest, refusing to treat quality culture as something to be progressively achieved at all; instead, it offers four ideal types defined by the intersection of group control and the intensity of external rules, with no hierarchy among them. The Quality Maturity Model (Wilson, 2013, 2015) retains a developmental architecture but applies it to quality culture itself, tracing eight facets across five maturity levels in academic libraries. The Maturity Matrix Model (Verschueren et al., 2023) integrates these two impulses, proposing four cultural archetypes, from dysfunctional to integrated, across eleven dimensions that span formal structures, human dynamics, and the connecting elements that bind them: leadership, communication, and participation. What unites these three models is that quality culture is their central object of analysis: its dimensions, indicators, and trajectories define what the model is equipped to engage with, and its absence or underdevelopment is treated as a problem.

In the second position, quality culture is one variable among several within a broader institutional or technological framework. The Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) embeds a culture of excellence as one of five components within the Favorable Governance dimension, which also includes vision and strategy, leadership, regulatory framework, and university autonomy and academic freedom. The Quality 4.0 Maturity Scale (Alzahrani et al., 2025) treats culture as one of eleven axes across the people, process, and technology dimensions of digital transformation. The HELA-CMM (Šimić et al., 2025) lists culture as one of eight categories required for the adoption of learning analytics, conceptualized primarily through the integration of digital and data-driven approaches into educational practice.

A third position is occupied, as a deliberate boundary case, by the Knowledge Management Maturity Model (Herminingsih & Ratnasari, 2024), which treats quality culture as an antecedent variable within a causal chain. Unlike the other six models in the corpus, it does not specify maturity stages or a developmental architecture. The model self-identifies as a maturity model and explicitly engages with quality culture. However, it satisfies neither the staged-progression criterion nor the developmental logic conventionally associated with the maturity-model tradition. Its inclusion is not an oversight but an analytical choice: retaining it at the edge of the corpus makes it visible that the boundaries of what counts as a maturity model are themselves contested, and it allows the review to mark the outer limit of the conceptual space within which quality culture is engaged. Using structural equation modeling on a sample of 149 academic staff at Indonesian universities, the model demonstrates that quality culture significantly enhances human resource management practices, which, in turn, drive knowledge management maturity. The quality culture itself exerts no statistically significant direct effect on the outcome; only an indirect one. In this framing, quality culture is neither figure nor ground but cause: a foundational condition whose institutional effects are realized only through the human resource practices it sustains. The model offers no developmental trajectory for quality culture itself, and no description of what a more or less mature quality culture would look like. It is therefore treated throughout as a limiting case rather than as a representative exemplar, and the conclusions drawn from the corpus as a whole are weighed accordingly.

The analysis suggests that these three positions are not analytically interchangeable. Where quality culture is treated as the figure, the model equips institutional actors to engage with it as something to be understood and cultivated. Where it is treated as the ground, the model offers procedural integration but operationalizes quality culture in attenuated terms relative to the figure-oriented models. Where it is treated as a cause, the

model specifies a pathway but provides little language for the quality culture itself. The Discussion takes up these positional differences as the basis for distinguishing the kinds of institutional conversation each model is equipped to support. The regional and regulatory contexts in which the non-Western models emerge shape both their analytical priorities and their conceptual treatment of quality culture. The Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) is explicitly designed to align with the national quality assurance framework administered by SUNEDU, as reflected in its policy-aligned logic of use and its embedding of quality culture within a Favorable Governance dimension that mirrors national regulatory priorities. The Knowledge Management Maturity Model (Herminingsih & Ratnasari, 2024) operates within the Indonesian Internal Quality Assurance System (SPMI), which positions quality culture as an institutional construct linked to broader governance and human resource practices. This positioning helps to explain why the model treats quality culture as an antecedent variable feeding into HRM rather than as a developmental construct in its own right. The Quality 4.0 Maturity Scale (Alzahrani et al., 2025) is grounded in a Saudi higher education landscape in which the Ministry of Education plays a strong coordinating role through Vision 2030 and in which the National Center for Academic Accreditation and Assessment provides the regulatory backbone for quality assurance; the model's structural integration of quality culture within a broader digital-transformation framework is consistent with this coordinated national strategy. These observations do not exhaust the regional specificity of the three models. However, they indicate that the choice of conceptual position is not independent of the institutional and regulatory context in which each model was developed.

2.11. Theoretical Foundations

The seven models in this corpus draw on two principal traditions, and the boundary between them is not neutral. The first is the design science maturity model tradition that descends from the original Capability Maturity Model (Paulk et al., 1993) and its methodological refinements (Becker et al., 2009; Mettler et al., 2010). This tradition assumes that institutional development can be specified, sequenced, and assessed through staged criteria, and that the function of a model is to provide diagnostic clarity. The Quality 4.0 Maturity Scale (Alzahrani et al., 2025), the HELA-CMM (Šimić et al., 2025), and the Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) work squarely within this tradition. Šimić et al. (2025) extend it by grounding their model in enterprise architecture theory through the Higher Education Reference Model, which adds an organization-wide capability lens to the maturity logic. The Quality Maturity Model (Wilson, 2013, 2015) borrows the structural form of this tradition; the five-level progression from ad hoc to continuous, but its conceptual center lies elsewhere. Wilson grounds her model in organizational culture theory and the total quality management literature, treating the staged architecture as a vehicle for cultural diagnosis rather than as a procedural template.

The second tradition is quality culture theory itself, and its analytical commitments are different. Where the design science tradition asks how an institution can be moved through stages, the cultural-theory tradition asks what quality culture is, how it is constituted, and why it resists procedural specification. Quality Culture Typology (Harvey & Stensaker, 2008) is the clearest expression of this tradition, drawing on Cultural Theory (Douglas, 2013; Thompson et al., 1990) to treat quality culture as emergent and contextually situated rather than as a position on a developmental scale. The Maturity Matrix Model (Verschuere et al., 2023) sits at the intersection of the two traditions, but draws its primary conceptual content from the cultural side: it builds on Sattler and Sonntags (2018) quality culture model, Harvey and Stensaker's (2008) typology, and Bendermacher et al.'s (2017) realist review, and develops its maturity descriptors through an abductive process rather than through design science methodology. The model integrates a maturity-stage

architecture with an appreciative-inquiry methodology, producing an instrument that is simultaneously diagnostic and dialogical. The Knowledge Management Maturity Model (Herminingsih & Ratnasari, 2024) sits outside both traditions. It draws on knowledge management theory and human resource management research, integrating organizational culture frameworks with structural equation modeling, and its analytical purchase lies in the causal logic of the SEM rather than in either maturity stages or cultural typology. The distribution of the corpus across these traditions matters. Five of the seven models draw on the design science tradition either directly or structurally, and four of these five also treat quality culture as a structural dimension or antecedent variable rather than as the central construct. This pattern is analytically interesting and warrants further investigation. The procedural assumptions of the maturity-model tradition may shape, rather than merely accommodate, the conceptualization of quality culture: where the staged logic is dominant, quality culture tends to be folded into broader transformation frameworks rather than theorized in its own terms. Where the cultural-theory tradition is dominant, quality culture is treated as the analytical figure, and its relational and contested character is preserved. The two traditions, in other words, appear to produce different objects of analysis rather than neutral variants of the same instrument. Why the design-science tradition has come to dominate the corpus is not only a conceptual matter but an institutional one. The external apparatus of accreditation, rankings, and performance-based funding rewards the comparable, audit-ready outputs that staged maturity logic is well-suited to producing, a connection developed in the Discussion.

2.12. Architectural Features

Architectural choices in models of institutional quality development are not merely technical. The number of levels a model adopts, the dimensions it specifies, and the assumptions it embeds about how institutional development unfolds shape what the model can describe and what it cannot. The seven models in this corpus exhibit two distinct architectural logics, and the choice between them is closely tied to how each model conceptualizes quality culture. Five models adopt staged developmental scales drawn from the Capability Maturity Model tradition. The Quality Maturity Model (Wilson, 2013, 2015), the Maturity Matrix Model (Verschuere et al., 2023), the Quality 4.0 Maturity Scale (Alzahrani et al., 2025), the HELA-CMM (Šimić et al., 2025), and the Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) each articulate progression through identifiable stages, broadly congruent with the original CMM sequence. The terminology varies from dysfunctional to integrated in Verschuere et al., from ad hoc to continuous in Wilson, from emerging to adaptive in Tocto-Cano et al., and from initial quality to Quality 4.0 in Alzahrani et al. However, the underlying assumption is shared: institutional development is presumed to unfold through identifiable stages, and a model's function is to locate the institution within that progression and indicate what comes next.

The comparison reveals that maturity is not universally understood as a developmental progression. The Quality Culture Typology (Harvey & Stensaker, 2008) conceptualizes quality culture through ideal-type profiles rather than stages, emphasizing its context-dependent and evolving nature. Likewise, the Knowledge Management Maturity Model (Herminingsih & Ratnasari, 2024) avoids staged classifications and instead explains relationships among organizational variables through structural equation modeling. These alternative architectures reflect broader theoretical differences. Whereas most models draw on the design science tradition and organize development into progressive levels, Harvey and Stensaker's framework is grounded in cultural theory and Herminingsih and Ratnasari's model in causal analysis. The findings therefore suggest that assumptions about the nature of quality culture directly influence how maturity is represented and assessed.

The models' dimensional breadth varies considerably. The Quality Maturity Model (Wilson, 2013, 2015) articulates eight facets specifically tailored to academic libraries. The Maturity Matrix Model (Verschuere et al., 2023) elaborates eleven dimensions across three groups: three formal-structural dimensions, three connecting dimensions, and five human-dynamic dimensions distributed across individual ownership and group-level dynamics. The HELA-CMM (Šimić et al., 2025) describes twenty-eight capabilities across eight categories. The broadest are the Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) and the Quality 4.0 Maturity Scale (Alzahrani et al., 2025), with 39 critical variables across 14 components and 95 practices across 11 axes, respectively. Across the corpus, leadership appears in all seven models; communication and stakeholder engagement in five; continuous improvement and feedback loops in all stage-based models; and quality assurance practices in the more recent ones. Cultural elements such as shared values, organizational alignment, and learning orientation feature prominently only in the models that theorize quality culture as the central construct. Attention across the corpus concentrates on institutional and professional actors. Students appear chiefly as recipients of educational quality, as sources of satisfaction or evaluation data, or as subjects whose activity is tracked, rather than as participants in the production of quality culture. Only the Maturity Matrix Model (Verschuere et al., 2023) positions students as stakeholders with a voice in the assessment process, through representation in its quality committee; even there, students figure as one stakeholder group among several. No model in the corpus treats students as co-producers of quality whose own understandings shape what is assessed. The implicit assumption of staged progression is consequential. Linear stage-based models presuppose that institutional development moves sequentially toward higher maturity. This assumption fits well with procedural domains but sits uneasily with cultural change, which is non-linear, contested, and shaped by institutional histories that resist standardization. The two models in the corpus that depart from staged progression are also the two that engage most directly with the relational and contested character of quality culture. Architectural choices, in other words, are not independent of conceptual depth: when the model assumes that development unfolds in stages, it tends to treat quality culture in terms compatible with that assumption; when it does not, it makes room for a richer engagement with the construct.

2.13. Stated Purposes and Applications

Maturity models are commonly classified by their mode of use: descriptive, prescriptive, or comparative (Rosemann & de Bruin, 2005). The seven models in this corpus can be read against this distinction. However, their purposes are better captured along a broader spectrum from instrumental to interpretive use, summarized in the Logic of Use column of Table 1, since the design-science typology of use-modes does not register the dialogical and explanatory orientations displayed by two of these models. Where a model sits on that spectrum follows from the architectural and conceptual choices already discussed. At the instrumental end, models function as diagnostic and prescriptive instruments. They generate measurable scores, benchmarkable profiles, and targeted improvement actions, and their value lies in the clarity they provide to institutional actors who need to identify where they stand and what they should do next. The provision of a structured developmental roadmap is most explicitly articulated by the Quality Maturity Model (Wilson, 2013, 2015), the Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) and the latter tying institutional diagnosis to a national regulatory standard so that self-assessment also functions as a check of compliance. Diagnostic measurement of readiness, coupled with comparison across institutions, is the central purpose of the Quality 4.0 Maturity Scale (Alzahrani et al., 2025) administered across twenty-six institutions, and of the HELA-CMM (Šimić et al., 2025), which extends its benchmarking function

toward strategic capability development through enterprise architecture. The Maturity Matrix Model (Verschuere et al., 2023) occupies an intermediate position. It retains the staged architecture of a diagnostic instrument, articulating four archetypes from dysfunctional to integrated, and in this respect supports the same descriptive and developmental functions as the stage-based models above. Its distinctive purpose, however, is dialogical: the matrix is intended to be worked collectively through appreciative inquiry, so that the act of assessment itself becomes an occasion for institutional reflection rather than a scoring exercise. Its developmental claims rest on a comparatively modest empirical foundation, having been pilot-tested through thirteen appreciative interviews within a single institution. At the interpretive end, models function as analytical lenses rather than diagnostic instruments. The Quality Culture Typology (Harvey & Stensaker, 2008) is directed toward conceptual clarification rather than measurement; its four ideal types provide an analytical vocabulary for understanding quality culture as emergent and contextually situated, and the model explicitly declines to position institutions along a developmental trajectory. The Knowledge Management Maturity Model (Herminingsih & Ratnasari, 2024) articulates a purpose different from that. Rather than assessing an institutional state or prescribing a path of development, it seeks to explain how quality culture operates as a cause, tracing through structural equation modeling the pathway by which it shapes human resource management practices and, in turn, knowledge management maturity. Because it assesses no maturity state and offers no developmental trajectory, its purpose situates it at the boundary of the corpus. Most models combine more than one of these purposes to varying degrees. However, the corpus's center of gravity lies closer to the instrumental end: the majority offer diagnosis, benchmarking, or developmental scoring as their primary function, while only the Maturity Matrix Model articulates dialogue and reflection as a purpose alongside diagnosis. This concentration reflects the dominance of the design science tradition identified earlier, and its implications for how institutions might draw on these models are taken up in the Discussion.

3. Discussion

The synthesis surfaced in the previous section supports three main conclusions. First, the conceptual position of quality culture is uneven across the corpus: in three models, it is the central object of analysis; in three, it is a structural dimension within a broader institutional or technological framework; and in one, it is an antecedent variable within a causal chain. These positional differences are not interchangeable, and they shape the kinds of institutional inquiry each model is equipped to support. Second, the linear maturity logic that organizes five of the seven models is only partly compatible with the relational, contested, and contextually situated nature of quality culture; the two models that depart from staged progression are also the two that engage most directly with this character of quality culture, suggesting that architectural assumptions and conceptual depth are linked. Third, the value of these models for higher education quality assurance is not best realized when they are used as prescriptive templates for institutional development. Their fuller value lies in their capacity to function as reflective and dialogic instruments, frameworks for institutional inquiry rather than scoring rubrics. The remainder of this Discussion develops each of these conclusions in turn, then takes up their implications for institutional practice and for future research.

3.1. *The Conceptual Position of Quality Culture Is Uneven and Consequential*

The first conclusion reaches beyond the descriptive observation that the corpus is divided. The position a model assigns to quality culture determines which institutional actors it can speak to and which institutional conversations it can support. Models that treat quality culture as the central construct address actors who are seeking to understand

and develop the cultural conditions that shape educational quality from within: deans who want to invite reflection on shared values, program directors who want to make sense of collegial dynamics, and quality officers who want to embed dialogue rather than compliance. Models that treat quality culture as a structural dimension speak to a different audience: managers and policymakers concerned with broader institutional or technological transformations in which culture is one variable to be managed alongside others. Models that treat quality culture as an antecedent variable address researchers seeking to specify the causal pathways through which cultural conditions produce institutional outcomes but offer little to actors trying to develop quality culture in practice. Explicitly discussing how these models inform or hinder practical actions can help readers understand their real-world implications.

This audience segmentation is rarely made explicit by the model developers themselves, yet it follows directly from the conceptual choices they have made. The risk for institutional adopters is that a model whose conceptual frame is poorly matched to the institutional question being asked will produce confident but irrelevant output scores or recommendations that do not address the actual challenge the institution faces. A maturity score derived from a model that treats quality culture as a procedural dimension will not help an institution that is trying to understand why its accreditation reports are accurate, but its culture feels stagnant. A typology that rejects developmental progression will not help an institution mandated to demonstrate progression to a regulator. The conceptual position of quality culture within a model is therefore not a technical detail; it is the most consequential filter on what the model can do. A second implication concerns what is at risk when quality culture is operationalized in attenuated terms. Where culture is treated as one dimension among many, data-driven decision-making in one model, cross-functional collaboration in another, a component of governance in a third, the relational, contested, and contextually embedded character of quality culture, as developed in the broader literature (Bendermacher et al., 2017; Cheng, 2017; Ehlers, 2009), is gradually displaced by more procedural conceptualizations. This is not a neutral substitution. It changes what the field considers quality culture to be, and it shapes the institutional practices that emerge in response. The dominance of the design science tradition within the corpus identified earlier gives this displacement institutional momentum that warrants critical attention rather than uncritical adoption. A third implication concerns whose understanding of quality culture is reflected in these models and whose is marginalized. The word “contested” appears throughout the quality culture literature. However, contestation is rarely innocent: it points to power asymmetries that determine which definitions of quality become institutionalized and which are rendered invisible. Maturity models, by virtue of their staged and standardized architecture, tend to encode definitions of quality that align with the priorities of the actors who design and validate them typically institutional leaders, quality assurance professionals, and external accreditation bodies. The definitions of quality held by teaching-focused academic staff, professional services personnel, students, and other actors whose work shapes educational quality on the ground may be poorly represented in these definitions, particularly when models are imported from contexts in which research-focused or managerial perspectives have shaped the original framework. The consequence is that maturity assessments can yield confident scores on indicators that reflect only a partial view of educational quality, while overlooking the cultural and professional conditions that the actors closest to teaching and learning would identify as central. This is not a problem of model architecture alone; it reflects the broader politics of who is recognized as a legitimate definer of quality within institutional and accreditation regimes (ALMandhari, 2026; Morley, 2024). Maturity models that are silent on this question of recognition risk consolidating existing patterns of voice and

exclusion within the institutions that adopt them, even when their stated aim is to support institutional development.

3.2. *The Limits of Linear Maturity Logic*

The second conclusion concerns the underlying assumption shared by five of the seven models: that institutional development is best understood as sequential progression through identifiable stages. As the analysis shows, this assumption can be traced to the Capability Maturity Model tradition (Paulk et al., 1993), which was developed for software engineering processes characterized by repeatable activities, codifiable practices, and clear criteria for what counts as more or less mature performance. Quality culture is none of these things. It is relational, contested, shaped by institutional histories, dependent on professional judgment, and resistant to standardization. Applying procedural-maturity logic to a non-procedural object is not a neutral methodological choice; it is a category transposition with consequences. The claim advanced here is conceptual rather than directly empirical. To our knowledge, no published study has compared the quality culture outcomes of institutions using staged maturity models with those using interpretive frameworks in a controlled, longitudinal design, and a recent scoping review of quality management in higher education identified such comparative work as a priority for future investigation (Guil Gorostidi & Rubio-Arostegui, 2026). The conceptual claim is, however, supported by a substantial body of indirect empirical evidence on the consequences of audit-driven and compliance-oriented quality regimes. Studies of academics' perceptions of audit cultures have consistently found that procedural quality assurance mechanisms are experienced as bureaucratic practices with limited impact on substantive educational practice (Cheng, 2017; Newton, 2002), and recent thirty-year retrospectives on quality assurance have documented the field's progressive shift from collegial enhancement-oriented practice toward externally driven audit regimes with weak effects on institutional culture (Harvey, 2024; Morley, 2024). Empirical work on quality improvement plans has further shown that compliance-driven systems tend to produce short-term procedural changes rather than sustained cultural development (Phokoye et al., 2026).

The tension this creates is not new in the broader literature on quality assurance in higher education. Harvey and Stensaker (2008) argued explicitly against the cultural imperialism implicit in maturity-model thinking, the assumption that quality cultures can be transferred across institutional contexts as portable best practice. The broader concern that procedural and audit-driven approaches risk producing the appearance of compliance without the substance of cultural change has been articulated across the field for two decades, including in the empirical work cited above. The corpus reviewed here reflects this tension rather than resolving it. Models that adopt staged developmental logics offer institutions diagnostic clarity at the cost of underspecifying the cultural and political dynamics that staged progression assumes; models that adopt cultural-theory perspectives offer analytical depth at the cost of practical guidance. A productive response to this tension is articulated in the Maturity Matrix Model (Verschuere et al., 2023), which integrates staged maturity logic with appreciative inquiry and an abductive theoretical foundation. The model retains the diagnostic clarity of stage-based frameworks while embedding it within a dialogical methodology that engages seriously with the relational and contested character of cultural change. The empirical foundation remains modest, having been pilot-tested through 13 appreciative interviews within a single Belgian institution, and its transferability to other higher education contexts requires further validation. The conceptual contribution, however, is significant: the model demonstrates that maturity-model thinking can be reconciled with reflexive cultural inquiry without forfeiting either its diagnostic utility or its theoretical grounding.

What follows from this conclusion for the field is not the rejection of staged developmental thinking but a more critical understanding of where it does and does not apply. Staged maturity logic remains useful for the procedural infrastructure that supports quality culture: quality assurance systems, data management, learning analytics adoption, and technological transformation. It should be applied to quality culture itself only with caution, and ideally in combination with frameworks that do not assume linear progression. The two models in the corpus that depart from staged progression offer different alternatives: the Quality Culture Typology replaces stages with ideal types, and the Knowledge Management Maturity Model replaces them with causal pathways. Neither is sufficient on its own, but both indicate that maturity-model architecture is not the only architecture available, and the question of why the staged architecture has nonetheless become the dominant one in the field requires its own brief consideration.

The dominance of the design-science tradition within the corpus cannot be explained solely by the analytical strengths of staged maturity logic; it also reflects the institutional infrastructure within which higher education quality assurance operates. National and supranational accreditation bodies, international rankings, performance-based funding mechanisms, and the consultancy market for institutional improvement generate demand for models that produce scoreable, comparable, and audit-ready outputs (ALMandhari, 2026; Galuppo et al., 2025; Hazelnorn, 2015; Marginson, 2016; Shore, 2026). The design-science tradition is well equipped to meet this demand. In contrast, the interpretive, contextual, and resistant-to-standardization cultural-theory tradition produces knowledge that does not easily travel into accreditation reports, ranking inputs, or commercial assessment products. As argued elsewhere, contemporary quality assurance has shifted from collegial, enhancement-oriented practice toward audit-driven regimes characterized by documentation, performance measurement, and externally verifiable outcomes, with consequences that reach beyond procedural form into the very meaning of quality (Harvey, 2024; McKenna, 2024; Morley, 2024). This shift has been further intensified by accreditation regimes that constrain pedagogical and curricular decisions to what can be aligned with external standards (Romanowski & Karkouti, 2024), and by an expanding consultancy market that profits from continuous institutional restructuring (Galuppo et al., 2025; Shore, 2026). The relative marginality of the cultural theory tradition in the corpus may therefore reflect not its limitations, but its institutional inconvenience to actors whose operational needs require the kinds of outputs procedural maturity models supply. This observation does not resolve the tension between the two traditions discussed above. However, it adds one layer of explanation for why that tension exists and why it has been resolved, in practice, in the direction the corpus reveals. This instrumental drift takes a particular form in the two models that embed quality culture within data-driven and technological frameworks. The Quality 4.0 Maturity Scale (Alzahrani et al., 2025) and the HELA-CMM (Šimić et al., 2025) locate quality culture inside architectures organized around digital capability, learning analytics, and the datafication of educational processes. When quality culture is positioned this way, what becomes visible is what can be captured, measured, and tracked: student activity data, dashboard indicators, and analytics readiness. The relational and contested dimensions of quality culture, whose understandings of quality count, how shared values are negotiated, and which voices are heard, are not merely underspecified but structurally harder to register, since they do not reduce to data points. The growing role of algorithmic governance and automated analytics in institutional quality assurance therefore raises a concern that extends the argument made here. As the apparatus of quality assessment becomes more datafied, the procedural conception of quality culture gains further institutional momentum.

In contrast, the interpretive conception it displaces becomes correspondingly more difficult to operationalize. A full treatment of how datafication and algorithmic

governance reshape quality culture lies beyond the scope of this review. However, the corpus suggests it is an increasingly consequential question for the field.

3.3. From Prescriptive Template to Reflective Tool

The third conclusion concerns how best to use these models across diverse institutional contexts. At the end of the instrument, models function as diagnostic and prescriptive instruments that generate scores, benchmarkable profiles, and target improvement actions. At the interpretive end, models function as analytical lenses that prompt institutional reflection on conditions that resist quantification. Most models combine both functions to varying degrees, but the center of gravity of the corpus sits closer to the instrumental end. This positioning has practical consequences. Institutions seeking accountability evidence for external review or accreditation may be drawn to instrumental models with explicit indicators and scoring rubrics. Institutions seeking to provoke internal conversation and shared reflection on the conditions of educational quality may be better served by interpretive models, or by instrumental models used in an interpretive spirit. The choice is not between rigor and reflection, but between different kinds of rigor: psychometric and procedural in instrumental use, and conceptual and dialogical in interpretive use. The reviewed corpus is, overall, weighed toward the instrumental end. This may reflect the dominance of design science and procedural maturity-model traditions in the recent literature, particularly in models that engage with digital transformation (Alzahrani et al., 2025; Šimić et al., 2025) and broader institutional governance (Tocto-Cano et al., 2020). It may also reflect the institutional pressures that make diagnostic instruments more publishable and more applicable in policy contexts than analytical typologies. The continued relevance of Harvey and Stensaker (2008), a model that has not aged as quickly as some of its more procedural successors, suggests that the interpretive end of the spectrum remains valuable, perhaps especially as a counterweight to the procedural emphasis of more recent work. The argument advanced here is not that instrumental use is wrong, but that it is incomplete when applied to quality culture. To address this, institutions should balance instrumental and interpretive approaches, integrating accountability with cultural development. The temptation to treat staged maturity scales as developmental imperatives, if institutions should move sequentially toward the highest level, risks reproducing the procedural and audit-driven dynamics that the quality culture literature has long cautioned against. A more productive use treats the model as a structure for institutional inquiry: a framework for asking how the institution organizes itself for educational quality, where its strengths and tensions lie, and what kinds of development would be locally meaningful. Used in this spirit, even predominantly instrumental models can support a cultural reflection they were not originally designed to support. The model is not abandoned; its function is reframed.

The analytical distinction between instrumental and interpretive use is a heuristic for understanding what these models are equipped to do, not a description of how institutions actually use them. In practice, most institutional users blend the two modes in ways shaped by multiple, often competing pressures. External accreditation requirements push toward instrumental scoring: an institution preparing for review must produce comparable, audit-ready outputs, whether its internal culture favors dialogical engagement. Internal reflective conversations among academic staff push in the opposite direction, demanding interpretive engagement with the cultural conditions that scoring rubrics cannot capture. The same institutional actors may move between these modes within a single accreditation cycle, using the model instrumentally in formal documentation while using it interpretively in staff workshops or program reviews. This blending is not necessarily inconsistent; it may reflect skillful institutional navigation of conflicting accountability demands. Recognizing this, the analytical task of the present review is to clarify what each

model is equipped to do, so that institutional actors can use the same model differently for different audiences and purposes, with awareness of where instrumental scoring captures what matters and where it does not.

3.4. Limitations of the Reviewed Corpus

Several limitations affect the corpus as a whole and bound the conclusions advanced above. Empirical validation across the corpus is uneven in both depth and method. Three cycles of pilot testing at two UK university libraries are reported for the Quality Maturity Model (Wilson, 2013, 2015). A pilot test through thirteen appreciative interviews supports the Maturity Matrix Model (Verschuere et al., 2023). Delphi consultation and content validity analysis underpin the Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020). The Quality 4.0 Maturity Scale (Alzahrani et al., 2025) was administered to twenty-six Saudi institutions, with reported Cronbach's alpha and Friedman test results. Structural equation modeling on a sample of 149 academic staff in Indonesian universities supports the Knowledge Management Maturity Model (Herminingsih & Ratnasari, 2024). The HELA-CMM (Šimić et al., 2025) was validated through a nominal focus group of six experts. The depth, scope, and rigor of validation vary considerably, and none of the models have been subjected to a longitudinal study tracking institutional change across maturity stages, which limits confidence in their predictive power.

Contextual adaptation is rarely systematic. Although all models acknowledge institutional context, few provide explicit guidance on how their structures should be adapted to different national systems, disciplinary cultures, or institutional types. The Maturity Model for Peruvian Universities (Tocto-Cano et al., 2020) makes its national context explicit; the Quality Maturity Model (Wilson, 2013, 2015) is tailored to academic libraries. To enhance practical applicability, future models should incorporate explicit adaptation strategies, such as case-specific guidelines or flexible frameworks, to better serve diverse institutional settings. Other models assume a degree of transferability that the cultural-theory literature would caution against (Harvey & Stensaker, 2008). The geographic distribution of conceptual development remains uneven. Western European contexts continue to dominate the theoretical conceptualization of quality culture as a maturity construct (Harvey & Stensaker, 2008; Verschuere et al., 2023; Wilson, 2013, 2015). Models from Latin American, Middle Eastern, and Asian contexts (Alzahrani et al., 2025; Herminingsih & Ratnasari, 2024; Tocto-Cano et al., 2020) have begun to extend the conversation but remain less integrated into the international literature on quality culture specifically. Several models rely on linear, stage-based progressions that are difficult to reconcile with the broader literature's established view of the non-linear, contested, and contextually situated nature of cultural change in higher education (Bendermacher et al., 2017; Cheng, 2017). The assumption that institutions move sequentially through defined stages, while diagnostically convenient, may underestimate the recursive, relational, and political dimensions of cultural development.

3.5. Implications for Institutional Practice

The selection of a maturity model is consequential for what an institution can subsequently learn from it. The conversation should guide the choice an institution wishes to have rather than by the prominence or sophistication of the model itself: where the institutional question concerns the cultural conditions of educational quality, models that theorize quality culture explicitly (Harvey & Stensaker, 2008; Verschuere et al., 2023; Wilson, 2013, 2015) are best suited to the inquiry; where it concerns broader transformation logics, models that incorporate quality culture within wider institutional or technological frameworks (Alzahrani et al., 2025; Šimić et al., 2025; Tocto-Cano et al., 2020) provide the relevant analytical scope; and where it concerns causal pathways, models that specify

those pathways (Herminingsih & Ratnasari, 2024) offer the relevant inferential structure. Once selected, the model is best implemented as a structure for institutional inquiry rather than as a developmental imperative; its descriptors are treated as prompts for shared reflection, its scoring rubrics as starting points for conversation, and its dimensions as questions to ask of the institution rather than conditions to satisfy. This is not a recommendation that institutions abandon instrumental use of maturity models, which is in many contexts unavoidable and in some contexts legitimately useful for the operational purposes of external review; it is a recommendation that institutions remain reflective about the limits of what instrumental scoring can capture and that they create complementary spaces for interpretive engagement with the same instruments. Institutional context should mediate this application throughout, since quality cultures are not portable artifacts but conditions that emerge from specific institutional histories, disciplinary cultures, and external pressures (Harvey & Stensaker, 2008); the model should be treated as a frame to be locally completed rather than a template to be locally applied. Trust and autonomy are essential for this reflective process, since without them an institution has little room to interpret and adapt models on its own terms. It must be acknowledged that the recommendation to use maturity models reflectively rather than prescriptively is not a context-neutral choice. The interpretive and dialogical mode of engagement endorsed here presupposes specific institutional conditions that are not equally present across higher education systems. These conditions include a meaningful degree of academic freedom and institutional autonomy, sufficient internal trust between staff and leadership to make critical self-assessment psychologically safe, and a regulatory environment that does not force every assessment instrument into the service of external accountability. In contexts characterized by tight government oversight, performance-based funding tied to maturity scores, or fragile professional trust, the same maturity model that supports reflective dialogue in one institution may be conscripted into compliance scoring in another. The recommendation advanced in this review should therefore be read as conditional rather than universal: institutions operating under stronger external accountability pressure or weaker conditions of trust may need to adapt the interpretive use of these models more substantially, or may find that the conditions for genuinely reflective engagement need to be cultivated alongside the introduction of the instrument itself.

In practice, using a maturity model as a structure for inquiry rather than a prescriptive template means treating its dimensions as questions rather than targets. A quality assurance unit might use the model's descriptors not to assign a score to be reported upward, but to prompt structured discussion among staff: where do we recognize ourselves in these descriptions, where do we not, and what would meaningful development look like in our context. The output of such use is a shared account of the institution's situation and priorities, rather than a maturity rating. Where the enabling conditions for this kind of engagement are weak, where trust is fragile, autonomy is limited, or every instrument is pulled into external accountability, the model can still be used diagnostically, but its interpretive value will be constrained until those conditions are cultivated. In such settings, the more realistic first step is not full interpretive deployment but the deliberate creation of low-stakes occasions for reflection that sit apart from formal reporting: using the model in a single department, or in a development workshop whose results are not tied to appraisal or audit, so that the conditions for more open engagement can begin to form. The detailed operationalization of this approach, including the instruments and protocols through which it might be enacted, lies beyond the scope of a critical review and is the focus of subsequent empirical work in this area.

3.6. Implications for Future Research

Five research directions follow from the analysis. Longitudinal studies that track how institutional quality cultures evolve through maturity stages would test the empirical reality of the developmental trajectories assumed by stage-based models, since none of the models reviewed has been subjected to such validation. The assumption of sequential progression remains, in effect, theoretical. Closely related to this, direct comparative testing of institutional outcomes under staged and non-staged maturity-model architecture is currently absent from the field, and such comparative empirical work would substantially strengthen the conceptual claim that architectural choices materially shape the quality culture outcomes that institutions develop. Empirical work in non-Western higher education contexts is also pressing: the recent growth of contributions from Latin American (Tocto-Cano et al., 2020), Middle Eastern (Alzahrani et al., 2025), and Asian (Herminingsih & Ratnasari, 2024) settings is productive, but these models tend to apply Western-developed frameworks rather than to engage substantively with local conceptual traditions, and research that develops quality culture frameworks from within these contexts would strengthen the geographic and conceptual diversity of the field. Methodological work that integrates the diagnostic strengths of stage-based models with the analytical depth of cultural-theory perspectives also warrants further investigation, with the Maturity Matrix Model's integration of maturity-model logic and appreciative inquiry (Verschueren et al., 2023) offering one promising direction along which participatory, dialogical, and reflexive methodologies might be incorporated into frameworks that retain practical applicability for institutional self-assessment. A further direction concerns the empirical study of how institutions implement reflective versus instrumental uses of maturity models, including how accreditation bodies and internal quality assurance units adapt their procedures to support either orientation; the operational specifics of such implementation lie beyond the scope of a critical review and require dedicated empirical investigation. Finally, participatory model development that involves institutional stakeholders, academic staff, students, support staff, and institutional leaders in co-designing frameworks for their own assessment can empower them and foster ownership, addressing the long-standing critique of instrumental approaches in the cultural-theory literature.

4. Conclusions

The seven maturity models reviewed in this article share a vocabulary but not a common project. They invoke quality culture in different ways and to different ends, and these differences are not incidental: the conceptual position a model assigns to quality culture governs what it can analyze and what it must take for granted. The contribution of this review is not the typology itself but what the typology reveals when applied across the corpus—that the field's apparent convergence on the language of quality culture maturity conceals a divergence in what these instruments are actually equipped to do, and that this divergence has been resolved, in practice, in favor of the procedural over the interpretive. That resolution is not the product of analytical merit alone. It reflects an institutional environment in which accreditation, rankings, and funding reward the comparable, audit-ready outputs that staged maturity logic produces, and in which the interpretive tradition's resistance to standardization is an institutional inconvenience rather than an intellectual limitation. The two models that depart from staged progression are also the two that engage most directly with the relational and contested character of quality culture, which suggests that the dominance of the staged form is not neutral with respect to how quality culture comes to be understood. The form of the instrument shapes the object it claims only to assess. What follows is not a verdict for or against any individual model but a position on how models of this kind are best used. Their value is realized when they are treated as structures for institutional inquiry rather than as templates for compliance,

as ways of asking how an institution organizes itself for educational quality, where its tensions lie, and what development would be locally meaningful. This use is conditional on unevenly distributed institutional circumstances, and it cannot be assumed to hold wherever a model is adopted. As higher education systems continue to absorb audit-driven pressures, the case for using these instruments reflectively rather than mechanically becomes more pressing, not less. Quality culture cannot be reduced to a stage; the models that engage most seriously with it are those that take that irreducibility as their starting point.

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