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Project Management in the Governance and Management of Higher Education Institutions: A Systematic Review, Bibliometric Analysis and Framework for Non-State Universities, with Implications for Uzbekistan

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Abstract

Purpose. Higher education institutions (HEIs) increasingly implement strategy, quality assurance, digitalisation and partnerships through projects, yet it remains unclear whether and how project management (PM) principles are embedded in institutional management systems, particularly in non-state (private) institutions. This study maps and synthesises research on PM as an element of HEI governance and management and develops a framework for non-state universities, using Uzbekistan's rapidly expanding non-state sector as the motivating context.

Design/methodology/approach. A PRISMA 2020-guided systematic review of Scopus (search date 12 November 2026) was combined with a bibliometric analysis in VOSviewer and a thematic synthesis. A proximity-based search strategy, validated by precision testing, yielded 394 records; 393 were screened and 74 studies were included. Keyword co-occurrence, co-citation and bibliographic-coupling networks were mapped for the 78 records retained at screening, and only clusters stable across three clustering resolutions were interpreted. A purposive contextual literature on private-HE governance (222 records) informed the non-state moderators.

Findings. Most research combining project management and higher education concerns teaching PM as a subject; the institutional stream is small, recent and fragmented across portfolio and IT governance, PM maturity and project management offices, university–industry R&D, change and accreditation projects, and support services. Its intellectual base is borrowed largely from generic PM research. Evidence is dominated by single-case studies; outcomes are rarely measured; and no study treats ownership as an analytical variable. Only nine studies contain any evidence from non-state institutions, and no research front addresses them.

Originality/value. The study distinguishes the institutional PM literature from the PM education literature, identifies the lack of the non-state evidence, and suggests a moderated framework consisting

of six propositions that can be tested regarding the relationship between institutional antecedents, PM capabilities, PM processes and outcomes.

Practical implications. Owners, rectors and regulators of non-state HEIs have an opportunity to establish a portfolio governance, PMO functions and PM maturity that is appropriate to the level of academic autonomy and must satisfy the requirements for licensing and reinvestment that are becoming more stringent.

Keywords: project management; project governance; higher education management; private higher education; non-state universities; systematic literature review; bibliometric analysis; Uzbekistan

1. Introduction

The demands for accountability for higher education institutions are growing, with a need to attract students and resources, meet quality assurance and accreditation standards, and go digital, while still maintaining academic freedom and fulfilling their educational and social role. On the other hand, universities are not like ordinary companies; they are made up of collegial and managerial structures, with academic and administrative logics that coexist, and many of their outputs are not measurable (Clark, 1998). The central issue in the management of the university is not so much whether universities should be managed, as much as what management principles can aid universities to bring their strategic objectives to fruition in a coordinated, accountable way without compromising their academic values.

One such set of principles in Project management is: Clear goals and scope, clear decision rights and responsibilities, planning and allocation of resources, managing risk and stakeholder, monitoring and evaluation, and governance of portfolios of projects. Organisation studies have documented a broad projectification of work, in which temporary organisations become a principal vehicle for change in permanent ones (Lundin & Söderholm, 1995; Midler, 1995; Hobday, 2000). Much university activity is already organised as projects, including externally funded research, accreditation and quality cycles, digitalisation programmes, campus development and university–industry collaboration (Fowler et al., 2015; Fernandes et al., 2020b; Cann & Brumagim, 2008). Whether, and how, PM principles are integrated into the institution's management system is a different and less examined question.

The question is especially pressing for non-state (private) institutions. Private higher education now accounts for roughly a third of global enrolment (Levy, 2018; Liu & Qureshi, 2026) and has been the fastest-growing segment of many systems (Levy, 2006). Non-state institutions differ from public ones in ownership and board arrangements, dependence on tuition, exposure to competition, regulatory and accreditation conditions, and the scope for entrepreneurial management, although the sector is itself heterogeneous, ranging from non-profit and religious to for-profit and demand-absorbing providers (Levy, 2006). Uzbekistan illustrates both the scale and the stakes. Following the 2019 Concept for the development of the higher education system until 2030 (Decree DP-5847, 2019), student numbers rose to about 1.7 million, six times the 2017 level, and by the end of 2025, 74 of the country's 207 HEIs were non-state, alongside 101 state institutions and 32 foreign universities and branches (Government of Uzbekistan, 2025). In 2025 the government tightened licensing for private HEIs, introducing minimum charter capital, a cash reserve, minimum premises and mandatory reinvestment of most net profit in the early years of operation (Kun.uz, 2025). Such conditions turn investment planning, resource allocation and compliance into institution-level management obligations of exactly the kind PM is designed to support.

Yet the evidence base is unclear. The literature that combines "project management" and "higher education" is large, but our analysis shows that most of it addresses the teaching of PM as a subject rather than the use of PM to run institutions (Section 4.1). The institutional stream is small and

dispersed across application areas that rarely cite one another, and direct evidence on non-state institutions is almost absent. Prior reviews have not separated these streams, synthesised the institutional evidence, or examined how the characteristics of non-state institutions might condition the value of PM principles.

This article addresses that gap through a PRISMA-guided systematic review, a bibliometric analysis and a thematic synthesis of research on PM as an element of HEI governance and management, read through the lens of non-state institutions. It asks five research questions. RQ1: How has research on PM in higher education developed, and what is its intellectual and thematic structure? RQ2: Which theoretical perspectives and which PM principles and practices does the literature link to HEI management? RQ3: What barriers and enablers affect integration, and which plausibly differ in non-state HEIs? RQ4: What empirical, theoretical, methodological, contextual and practical gaps remain? RQ5: What framework can explain how PM principles could support governance, strategy implementation, effectiveness and sustainability in non-state HEIs?

The study makes three contributions. First, it provides an evidence map that distinguishes the institutional PM literature from the much larger PM-education literature and documents the scarcity of non-state evidence. Second, it offers a critical synthesis of what is known about PM as a component of HEI management systems, including its mechanisms, enablers and tensions with academic logics. Third, it develops a context-sensitive framework of six propositions for non-state HEIs, intended for empirical testing rather than presented as a validated model. Section 2 sets out the theoretical background; Section 3 describes the methods; Sections 4 and 5 report the bibliometric and systematic results; Section 6 discusses them; Section 7 presents the framework; and Sections 8 and 9 address contributions, limitations and conclusions.

2. Theoretical background

2.1 Projects, projectification and project governance

Project management traditionally concerns the planning and control of temporary endeavours against objectives of scope, time, cost and quality. Organisation theory has broadened this view: temporary organisations are now understood as vehicles through which permanent organisations act, learn and change (Lundin & Söderholm, 1995), and projectification describes the spread of project forms across organisational activity (Midler, 1995). Project-based organisations coordinate work through projects rather than functional hierarchies, which offers flexibility but creates problems of capability building and cross-project learning (Hobday, 2000). As organisations run many projects at once, attention shifts from single projects to the governance of projects: the structures, decision rights and accountabilities that align projects with strategy (Too & Weaver, 2014), the portfolio processes that select and balance initiatives (Unger et al., 2012), and supporting units such as project management offices (PMOs) (Hobbs et al., 2008; Dai & Wells, 2004). Maturity models describe how far these capabilities are institutionalised (Ibbs & Kwak, 2000). This multi-level view of PM, spanning project, programme, portfolio, PMO and governance, frames the present review.

2.2 Universities as distinctive organisations

Professional autonomy, collegial decision-making, loosely coupled units and increasing managerial and external accountability demands are combined at the university level (Clark, 1998). Institutional theory provides a rationale for how organisations in the same industry will come to be structured under coercive, normative and mimetic pressures (DiMaggio and Powell, 1983) and for how formal structures can be taken on "ceremoniously" and can be "decoupled" from organizational work (Meyer and Rowan, 1977). The institutional-logics perspective also posits that actors have varying logics that may be even contradictory, each having its own criteria for legitimacy (Thornton & Ocasio, 1999). A collegial-academic logic exists in universities alongside managerial and compliance logics. In the context of PM, these views suggest that PM tools could be used for legitimacy (to meet funders or accreditors requirements, etc.) and could be resisted by academics or be selectively accommodated.

2.3 Stakeholders, resources and capabilities

The plural constituencies of universities, such as students, academics, administrators, owners, regulators, employers and funders, all have expectations that PM must balance within the context of the stakeholder theory (1984) of Freeman. The resource-based view (Barney, 1991) and the dynamiccapabilities perspective (Teece et al., 1997) offer frameworks for understanding how PM capability (in the form of processes, routines, people and structures, including PMOs) can be valuable, hard to imitate and reconfigurable to gain an organisational advantage in the face of change. These lenses link PM to institutional performance and adaptability rather than to the success of individual projects alone.

2.4 Non-state higher education

What is experienced across the globe is a growth of private higher education, frequently in a series of demand absorbing surges in growth, and varied in regard to mission, ownership and quality (Levy, 2006; Levy, 2018). Agency theory (Jensen & Meckling, 1976) is applicable when the owner (founder foundation) transfers the management to executives and academics whose interests might differ, which is observed in private universities where management authority outweighs the academic authority (Górska, 2026; Hidayati et al., 2023). Also, nonstate institutions rely more on tuition and are more vulnerable to market shocks or changes in regulations (Dorantes & Low, 2016; Teixeira & Amaral, 2007; Lee et al., 2020). Governance structures differ considerably from one system to another, ranging from foundation-led governance (in China, Liu, 2020a; Liu, 2020) to party-led governance (in China) to a range of ownership structures (in Vietnam, Chau et al., 2022) to state-designed marketisation (in Egypt, Barsoum, 2020). These differences suggest that the value and form of PM may be conditioned by ownership, financing and regulation, which is the premise of the non-state lens adopted here.

3. Methodology

3.1 Research design

The study combines three complementary methods. A systematic literature review (SLR) identified and assessed the relevant evidence following PRISMA 2020 (Page et al., 2021), reporting of the search followed PRISMA-S (Rethlefsen et al., 2021), and the review drew on established practice for management reviews (Tranfield et al., 2003). A bibliometric analysis mapped the field's intellectual and thematic structure (Donthu et al., 2021; Zupic & Čater, 2015). A thematic synthesis (Thomas & Harden, 2008) of the included studies answered RQ2–RQ4 and informed the framework (RQ5). The bibliometric corpus and the review corpus are related but deliberately distinct: science mapping requires breadth and uses all records retained at title/abstract screening, whereas synthesis requires eligible studies. The protocol was fixed before the final searches (Protocol v1.0, 12 November 2026); one amendment, introducing two provisional ownership codes, is reported in the supplementary material.

3.2 Database and search strategy

Scopus was selected for its broad coverage of education and management journals and its structured export of cited references, which bibliometric analysis requires; Web of Science was not available to the authors (Section 8.3). Search strings were developed iteratively and tested for precision against a pilot export of 2,696 records. A conventional Boolean string combining PM and higher-education terms returned about 2% relevant records in a random sample of 100, because the term universit* matches almost any abstract; adding a management-context block raised precision only to about 6–12% and missed relevant studies. Requiring the PM term to occur within ten words of the higher-education term (W/10) raised precision to about 25%, and this proximity string was adopted as the main search. A supplementary search without the proximity restriction targeted studies mentioning private or non-state institutions, so that no direct non-state evidence would be missed. Table 1 reports the final strings, run on 12 November 2026.

Table 1. Final Scopus search strategy (12 November 2026)

Search	Role	Query (TITLE-ABS-KEY unless stated)	Limits	Records
F1	Main search (review and bibliometrics)	("project management" OR "project governance" OR "project-based management" OR "project-based organi?ation*″ OR "project-oriented organi?ation*" OR "project portfolio*″ OR PMBOK OR PRINCE2 OR "project office*") W/10 ("higher education" OR universit OR "tertiary education" OR "academic institution*" OR "post-secondary" OR "postsecondary" OR HEI OR HEIs OR college*)	Articles and reviews; journals; English	320
F2	Non-state supplement	PM terms AND higher-education terms AND ("private universit*″ OR "private higher education" OR "private college*" OR "private institution*″ OR "non-state" OR "nonstate" OR "independent universit*" OR "for-profit" OR "privately funded" OR "private provider*")	English; all document types	74
F3	Sensitivity (not screened)	As F1 with W/15	As F1	430

Search	Role	Query (TITLE-ABS-KEY unless stated)	Limits	Records
F4	Sensitivity (not screened)	As F1, conference papers	English	397

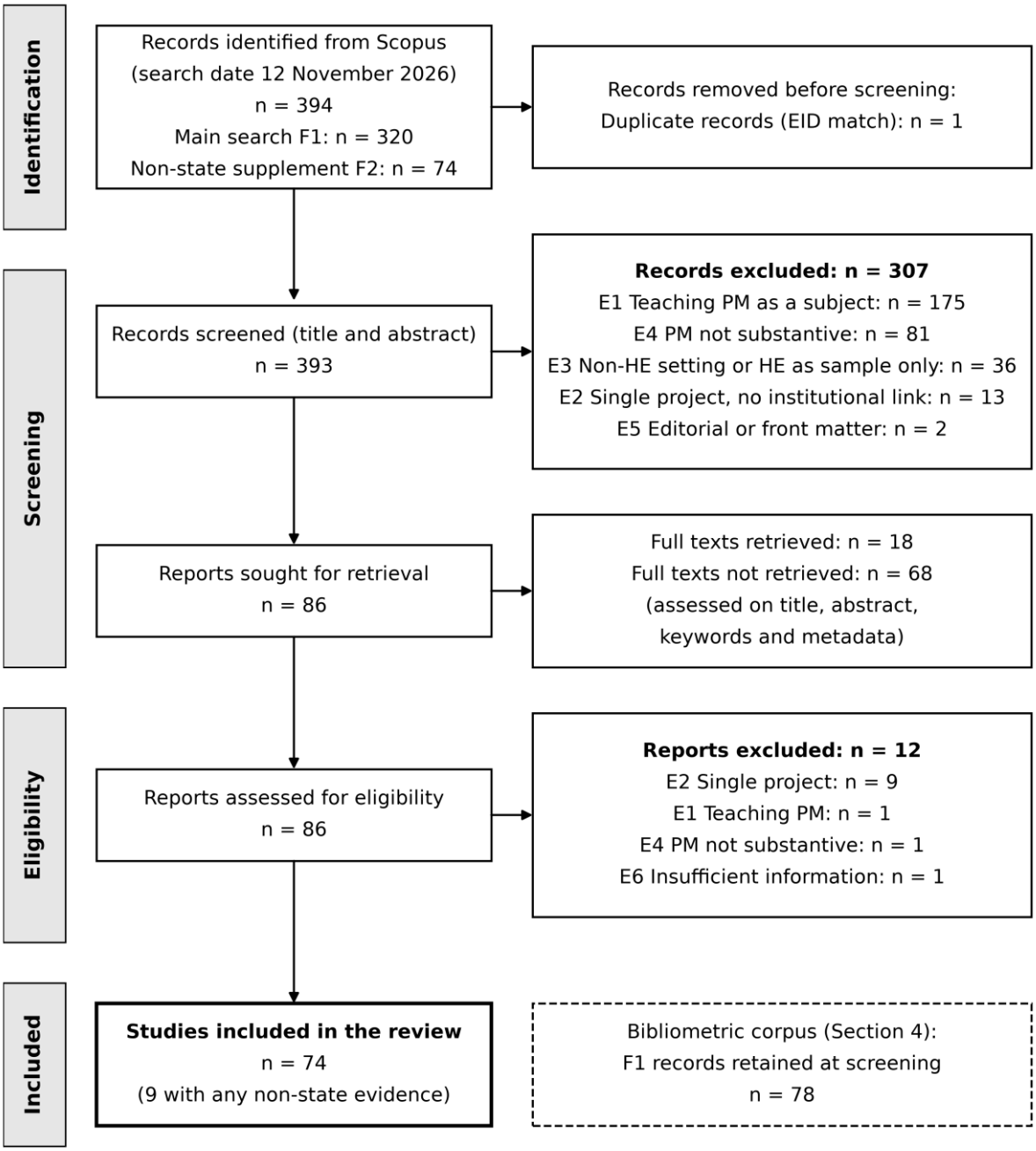
3.3 Eligibility criteria and selection

Table 2 summarises the eligibility criteria. Ownership was coded as private non-profit, private for-profit, public, other or not stated, with non-state defined as private non-profit or for-profit. Each study was also assigned a relevance tier: direct evidence on non-state HEIs (T1), HEIs with public or unstated ownership (T2), or non-HE settings used for theory only (T3).

Table 2. Eligibility criteria

Criterion	Inclusion	Exclusion code
Setting	Higher education institution or unit (any ownership)	E3: non-HE setting, or HE only as the sampling frame
Phenomenon	Institutional application of PM principles, practices, structures or governance	E1: teaching or learning PM as a subject; E4: PM mentioned but not substantive
Scope	Projects linked to institutional management (strategy, governance, quality, services, research, partnerships, infrastructure)	E2: a single research, construction or IT project with no institutional link
Publication	Peer-reviewed journal article or review (F1); any document type screened for F2	E5: editorials, front matter
Language	English	—
Availability	Assessable report	E6: insufficient information to assess

Records were deduplicated by Scopus EID, DOI and normalised title-and-year (394 to 393 records). One reviewer screened all titles and abstracts against the criteria, applying documented decision rules; records whose eligibility was uncertain were coded as possible inclusions and carried forward to eligibility assessment rather than excluded. Of 393 records, 307 were excluded, most often because they concerned teaching PM as a subject (E1, n = 175) or did not treat PM substantively (E4, n = 81). The 86 remaining reports were sought for full-text assessment. Eighteen full texts were retrieved through open-access routes; the remaining 68 reports could not be retrieved and were assessed on their titles, abstracts, keywords and bibliographic metadata. Twelve reports were excluded at eligibility, mostly single projects without an institutional link (E2, n = 9), leaving 74 included studies (Fig. 1).



Layout adapted from the PRISMA 2020 flow diagram (Page et al., 2021).

Figure 1. PRISMA 2020 flow diagram.

3.4 Data extraction, appraisal and synthesis

A structured matrix recorded, for each study, the country, organisational unit, research design, level of the PM construct (project, programme, portfolio, PMO/support structure, maturity or capability, governance, or delivery methodology), thematic focus, ownership, principal findings and claimed outcomes. Evidence was weighted using the Weight of Evidence framework (Gough, 2007), which separates methodological quality, design fit and topical relevance. Because most reports could be assessed only from their abstracts and metadata, a formal methodological appraisal with the Mixed Methods Appraisal Tool (Hong et al., 2018) was not feasible; weighting therefore rested on design fit

and topical relevance (the relevance tiers T1–T3), and the strength of evidence is reported descriptively rather than through quality scores. Citation counts were not treated as indicators of quality. Thematic synthesis (Thomas & Harden, 2008) proceeded from coding of reported findings to descriptive and then analytical themes, using the bibliometric clusters as sensitising categories rather than a predetermined frame. Evidence from non-state institutions was synthesised separately, and any inference transferred from public to non-state contexts is flagged as such.

3.5 Bibliometric analysis

The bibliometric corpus comprised the 78 F1 records retained at title/abstract screening; all 320 F1 records were mapped as a sensitivity analysis to show the position of the institutional literature relative to the teaching literature. Author and index keywords were standardised with a documented thesaurus that merged variants, plurals, acronyms and Spanish and Portuguese equivalents and removed generic indexer terms. The search-defining terms (project management, higher education, university, education) were removed from keyword maps because every record contains them by construction. Cited references were parsed after re-joining author fragments, which Scopus separates with the same delimiter as references, and matched on first-author surname, year and leading title words, yielding 2,830 unique cited references.

Networks were constructed in Python and mapped in VOSviewer 1.6.21 (van Eck & Waltman, 2010). Keyword co-occurrence and bibliographic coupling used fractional counting (Perianes-Rodriguez et al., 2016), co-citation used full counting, links were normalised by association strength (van Eck & Waltman, 2009), and the VOS layout and modularity-based clustering were applied (Waltman et al., 2010; Waltman & van Eck, 2013). Thresholds followed corpus size (keywords occurring at least twice; references co-cited by at least three documents), and alternative thresholds were run as sensitivity checks. Every map was clustered at resolutions 0.8, 1.0 and 1.2; a cluster was interpreted only if a cluster overlapping it with a Jaccard similarity of at least 0.5 appeared at both alternative resolutions, and agreement across resolutions was summarised with the adjusted Rand index (ARI). A title-and-abstract term map produced by VOSviewer's own term extraction was dominated by generic words at this corpus size and was not interpreted. All scripts, inputs, map and network files and parameters are provided as supplementary material.

3.6 Contextual literature

To specify how non-state characteristics might moderate PM, a separate, clearly labelled contextual search retrieved literature on the governance, management, financing and regulation of private HE (358 records) and on Uzbekistan's higher-education system (76 records). Records were screened against rules fixed beforehand, and 222 were retained (197 on private-HE management, 19 on Uzbekistan, 6 on background facts) and grouped into moderator themes. This literature informs the framework only; it is not part of the systematic evidence base or the PRISMA flow. Official Uzbek sources were cited only after verification from the issuing body or a reputable report.

4. Bibliometric results

4.1 Two literatures: teaching PM and managing universities by PM (RQ1)

The keyword map of all 320 main-search records (79 keywords; five of seven clusters stable) separates sharply by how many documents in each cluster survived screening (Table 3; Fig. 2). Clusters centred on teaching, engineering education, curricula and PM education retained only 4% of their documents, and a leadership, construction and entrepreneurship-education cluster retained 15%. By contrast, clusters on project portfolio management and decision methods (31%), academic libraries, information systems and risk management (33%), and PMOs, agile PM, HEIs and university–industry collaboration (41%) retained far more. Even under a proximity-restricted search, most research combining PM and higher education is therefore about teaching PM; reviews that pool the two literatures risk overstating what is known about PM as a component of institutional management.

Table 3. Clusters of the unscreened keyword map (all 320 F1 records) by share of documents retained at screening

Cluster	Stable	Leading keywords	Documents	Retained
Teaching and curricula	No	teaching; engineering education; curricula; PM education; software PM	70	4%
Student learning and training	Yes	student; education computing; personnel training; learning systems	69	4%
Leadership, construction, entrepreneurship education	Yes	leadership; knowledge management; construction industry; curriculum	62	15%
Portfolio management and decision methods	Yes	project portfolio management; assessment; scheduling; AHP	29	31%
Libraries, information systems and risk	Yes	human resource management; academic libraries; information systems; risk management	33	33%
R&D, information management, digital transformation	No	information management; R&D management; digital transformation	23	35%
PMO, agile PM and university–industry collaboration	Yes	agile PM; PMO; higher education institutions; university–industry collaboration	39	41%

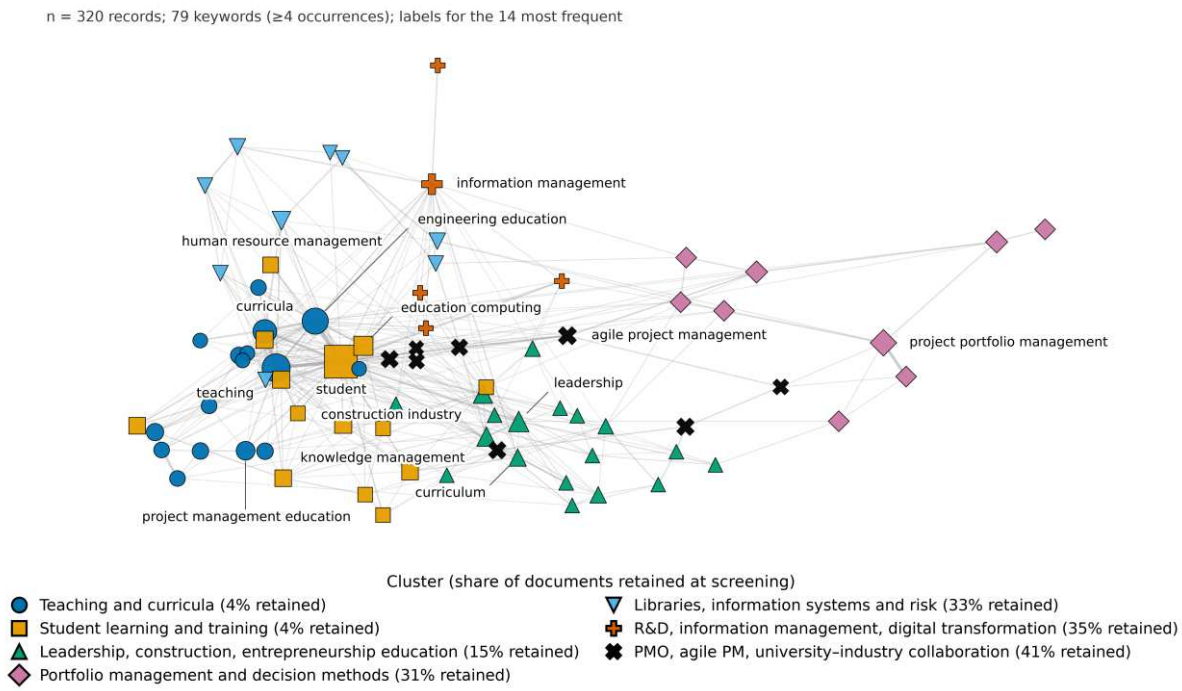


Figure 2. Keyword co-occurrence map of all 320 main-search records (author and index keywords; at least four occurrences; fractional counting; association strength; resolution 1.0). Node positions and clusters are those computed by VOSviewer; labels are shown for the 14 most frequent keywords. Percentages give the share of each cluster's documents retained at title/abstract screening.

4.2 Descriptive profile of the core corpus

The 78 retained records span 1989–2026 (Table 4; Fig. 3). Output was sporadic before 2013, with at most two records a year, and has been higher since, peaking at nine records in 2024. The records are spread across 65 sources, none publishing more than four; the leading venues are the International Journal of Managing Projects in Business (four documents, 121 citations), Tertiary Education and Management (three) and the Journal of Technology Transfer (two documents, 51 citations), alongside several library-science journals. The field thus lacks an institutional home, being split between PM, higher-education management and library journals. Collaboration is limited: 21% of documents are single-authored and only 18% involve more than one country. The United States (16 documents) and the United Kingdom (7) lead, followed by China and Ireland (6 each) and Spain, Ukraine and Russia (5 each); post-Soviet systems contribute a visible, recent share of the literature. The most cited records concern the projectification of university research (Fowler et al., 2015) (58 citations), the management of a major curriculum reform (Maaz et al., 2018) (47) and PM in university–industry R&D programmes and their PMOs (Fernandes et al., 2020b; Fernandes et al., 2020a; Fernandes & O'Sullivan, 2023) (34–43).

Table 4. Descriptive indicators of the bibliometric corpus

Indicator	Value
Documents (articles / reviews)	78 (77 / 1)
Timespan	1989–2026 (2026 partial)
Sources	65
Author name strings	214

Indicator	Value
Single-authored documents	16 (21%)
Mean authors per document	2.90
Countries (affiliations)	36
Internationally co-authored documents	14 (18%)
Scopus citations (mean per document)	714 (9.15)
Unique cited references	2,830

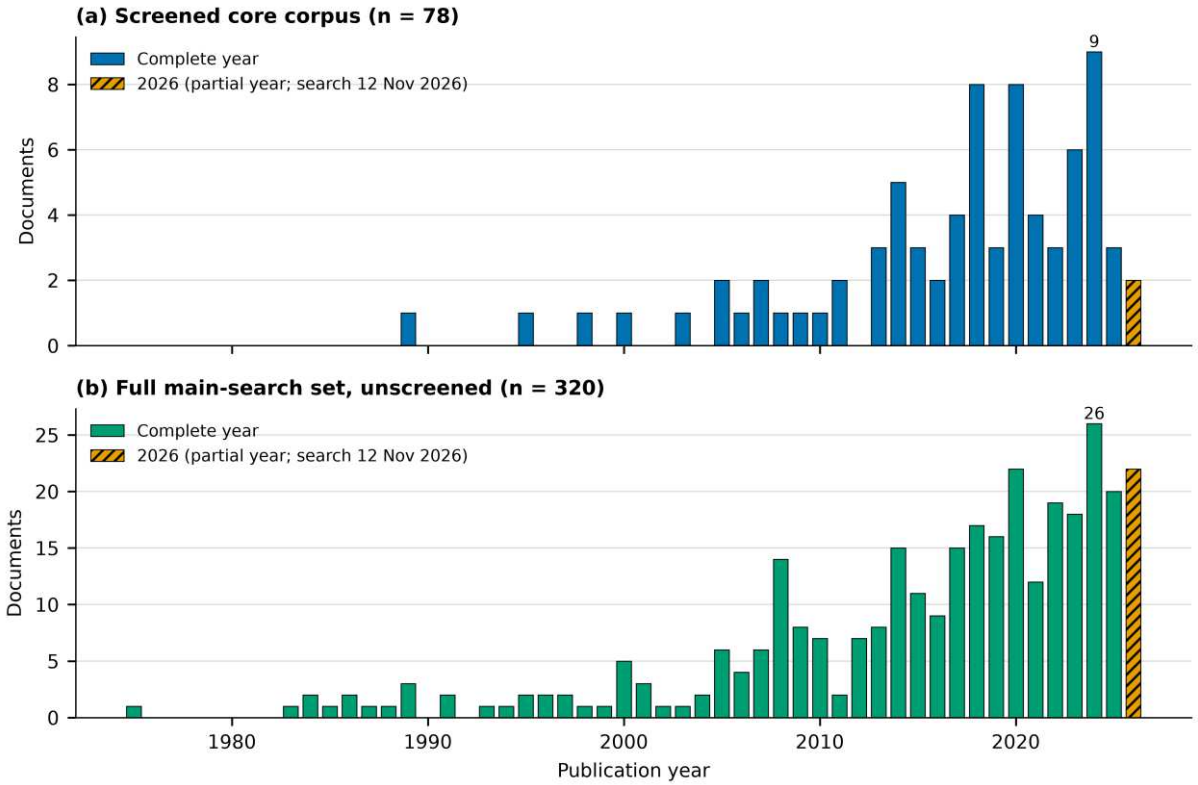


Figure 3. Annual publications: (a) screened core corpus (n = 78); (b) full main-search set (n = 320). The hatched bar marks the partial year 2026.

4.3 Thematic structure: keyword co-occurrence

The main keyword map contains 27 connected keywords forming five clusters, all stable across resolutions (ARI = 1.00; Table 5; Fig. 4). The overlay visualisation (Fig. 5) shows a shift from unit-level change and service projects (mean publication years 2012–2016) towards portfolio, governance and maturity themes (2019.5–2020.8). Strategy implementation and portfolio alignment, governance, stakeholder management and organisational change are represented; financial and resource management, risk, digital transformation and sustainability do not form stable clusters.

Table 5. Keyword clusters of the core corpus (stable across resolutions 0.8–1.2)

Cluster (authors' label)	Keywords (occurrences)	Mean year
K1 PM in academic support services	academic libraries (4); student (3); teaching (3); agile PM (3); information management (3); information systems (2); human resource management (2)	2016.0
K2 Portfolio selection and IT governance	project portfolio management (6); COBIT 5 (2); IT governance (2); public universities (2); AHP (2); TOPSIS (2)	2020.8

Cluster (authors' label)	Keywords (occurrences)	Mean year
K3 Maturity, capabilities and innovation projects	higher education institutions (5); knowledge management (4); innovation project (3); PM maturity (3); project performance (2); collaborative innovation (2)	2020.2
K4 Change, strategy and stakeholders	change management (3); information technology (2); collaboration (2); strategic planning (2); stakeholder (2)	2012.4
K5 PMOs and university–industry R&D	university–industry collaboration (5); PMO (4); balanced scorecard (2)	2019.5

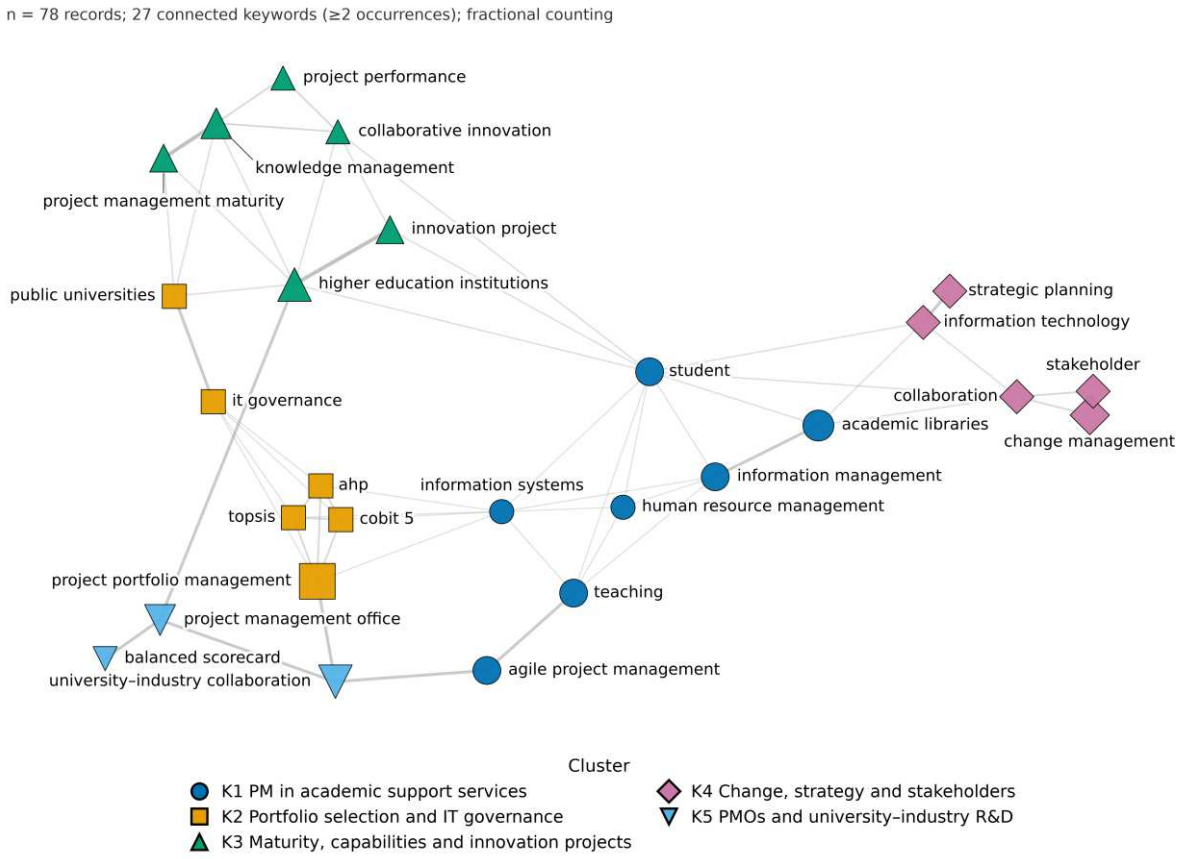


Figure 4. Keyword co-occurrence network of the core corpus (n = 78; 27 connected author and index keywords with at least two occurrences; fractional counting; association strength; resolution 1.0). Node positions and clusters are those computed by VOSviewer; node size is proportional to occurrences.

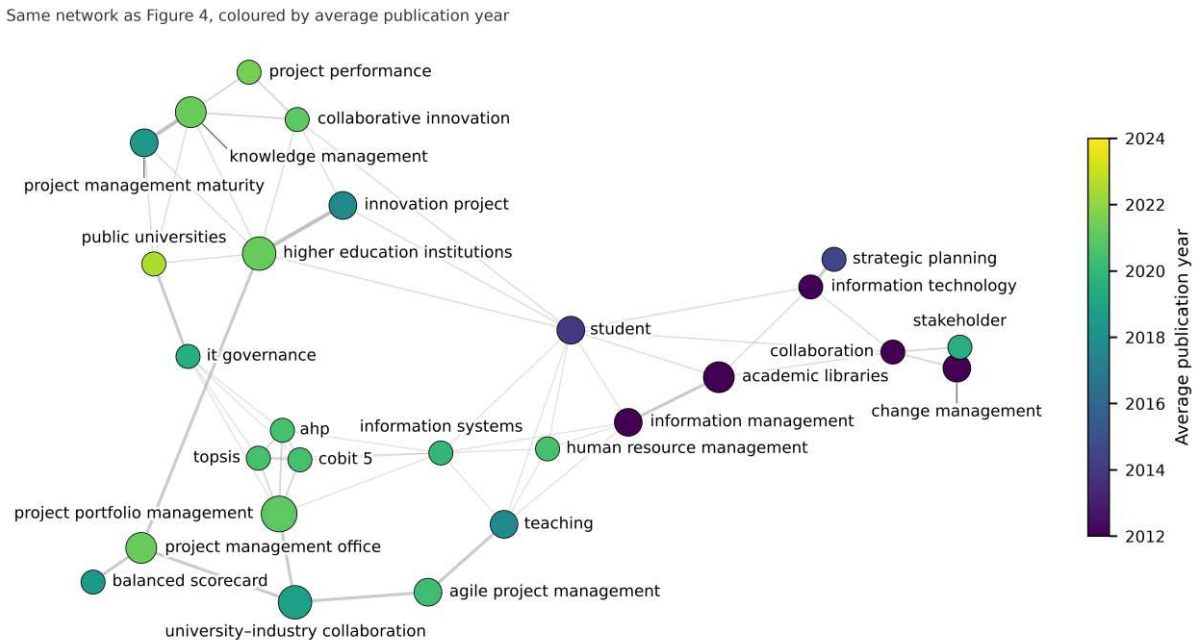


Figure 5. Overlay visualisation of the network in Figure 4, coloured by the average publication year of the documents in which each keyword occurs (scale 2012–2024).

4.4 Intellectual base: co-citation

Forty-two references co-cited by at least three core documents form four stable clusters (ARI = 1.00; Table 6; Fig. 6). The first concerns the management of collaborative university–industry R&D (Barnes et al., 2002; Ankrah & AL-Tabbaa, 2015); the second, PMOs, portfolio management and project governance (Unger et al., 2012; Dai & Wells, 2004; Too & Weaver, 2014; Hobbs et al., 2008); the third, PM performance and maturity (Ibbs & Kwak, 2000), which includes the only higher-education anchor, a study of business process re-engineering in Malaysian private HEIs (Ahmad et al., 2007); and the fourth, PM in academic libraries. The intellectual base is therefore largely borrowed from generic PM research and from the university–industry literature; stakeholder theory (Freeman, 1984) and projectification (Midler, 1995) are the only theoretical anchors among the most co-cited works, and the library cluster is linked to the rest of the map only through a qualitative-methods text, indicating that it shares a method rather than an intellectual foundation with the field.

Table 6. Co-citation clusters and bibliographic-coupling research fronts

Map	Cluster (authors' label)	Representative items	Mean year
Co-citation	C1 Collaborative university–industry R&D	Barnes et al. (2002); vom Brocke and Lippe (2015); Ankrah and AL-Tabbaa (2015); Freeman (1984); Midler (1995)	—
Co-citation	C2 PMOs, portfolios and project governance	Unger et al. (2012); Dai and Wells (2004); Too and Weaver (2014); Hobbs et al. (2008); Artto et al. (2011)	—
Co-citation	C3 PM performance, maturity and BPR in HE	Badewi (2016); Mir and Pinnington (2014); Ahmad et al. (2007); Ibbs and Kwak (2000)	—
Co-citation	C4 PM in academic libraries	Kinkus (2007); Massis (2010); Greene (2010); Burich et al. (2006)	—
Coupling	B1 Project governance, strategic alignment and risk	Macheridis (2017); Macheridis (2018); Warda (2014); Daradkeh (2024); Gomes et al. (2023); Barbosa and Löbler (2020)	2020.1

Map	Cluster (authors' label)	Representative items	Mean year
Coupling	B2 Stakeholders, value and performance measurement	Ahriz et al. (2018); Walker and Lloyd-Walker (2014); Salimi et al. (2015); Philbin and Kaur (2020); Cheshmberah (2020)	2019.8
Coupling	B3 PM in academic libraries	Feeney and Sult (2011); Greene (2010); Chambers and Perrow (1998); Porter (2019); Harper (2018)	2010.4
Coupling	B4 PM maturity and capability in HEIs	Alghail et al. (2022); Alghail et al. (2024); Bryde and Leighton (2009); Wierschem and Johnston (2005); Mukhtarova and Smith (2014)	2015.9
Coupling	B5 Projectification and institutional logics	Fowler et al. (2015); Fernandes et al. (2020a); Fernandes and O'Sullivan (2023); Jałocha et al. (2023); Tercanli et al. (2024)	2020.4
Coupling	B6 PMOs and research-project support structures	Fernandes et al. (2020b); Fernandes et al. (2021); Teslia et al. (2020); Twohig et al. (2023); Sánchez et al. (2024)	2021.5

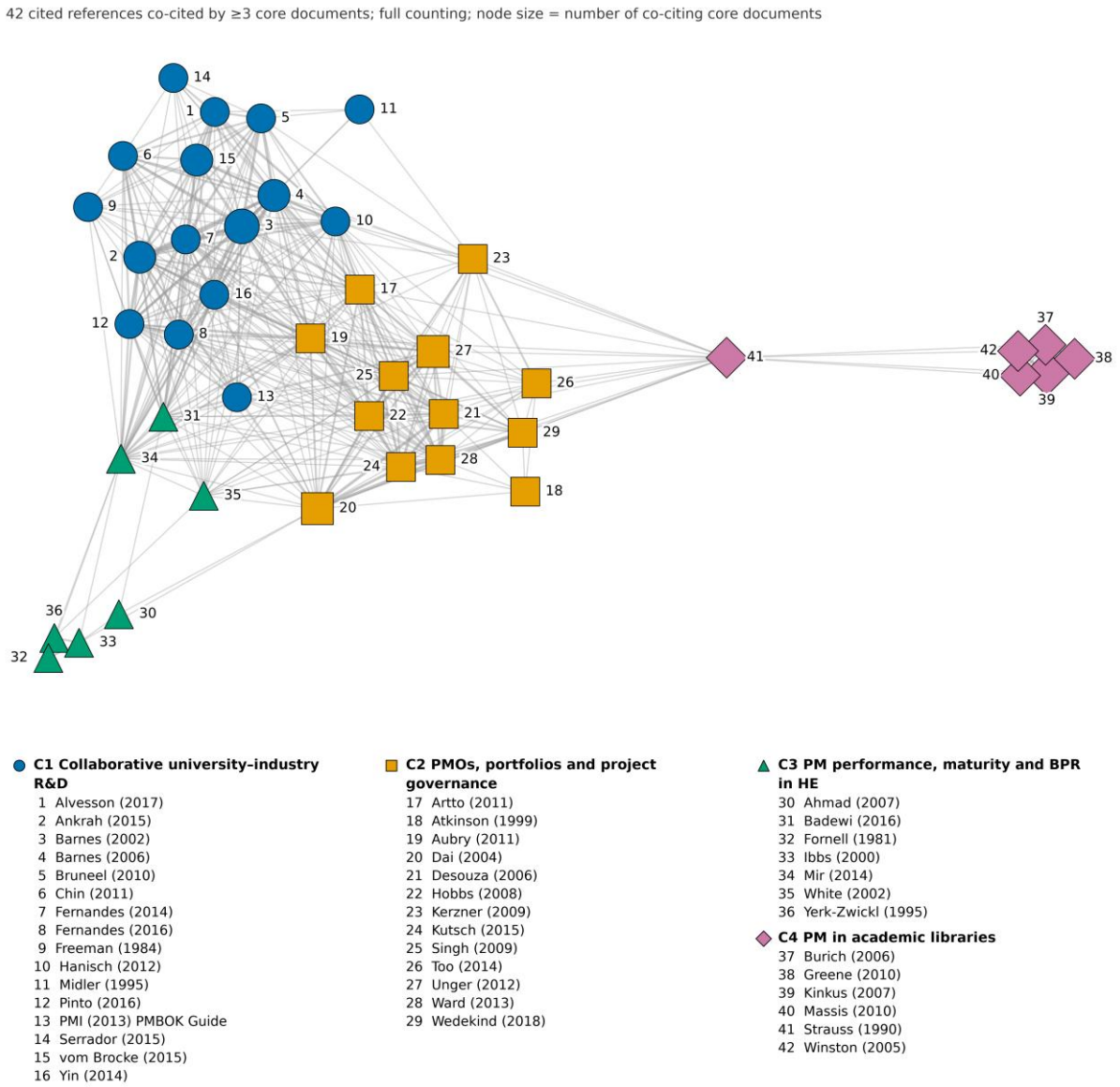


Figure 6. Co-citation network of the 42 cited references co-cited by at least three core documents (full counting; association strength; resolution 1.0). Nodes are numbered and listed by cluster in the key; node size is the number of co-citing core documents.

4.5 Research fronts: bibliographic coupling

Forty-eight coupled documents form six stable research fronts (ARI = 1.00; Table 6; Fig. 7). The most active fronts concern project governance, strategic alignment and risk (B1), stakeholder value and performance measurement (B2), projectification and institutional logics in university research and collaboration (B5), and PMOs and research-project support (B6), with mean publication years between 2019.8 and 2021.5. The library front (B3) is older and weakly coupled to the others, and the maturity front (B4) contains the only Central Asian study (Mukhtarova & Smith, 2014). No front is organised around ownership, financing or non-state institutions; the few non-state studies appear as isolated documents within fronts defined by other themes. Direct evidence on non-state institutions is therefore not merely scarce but lacks a research front of its own.

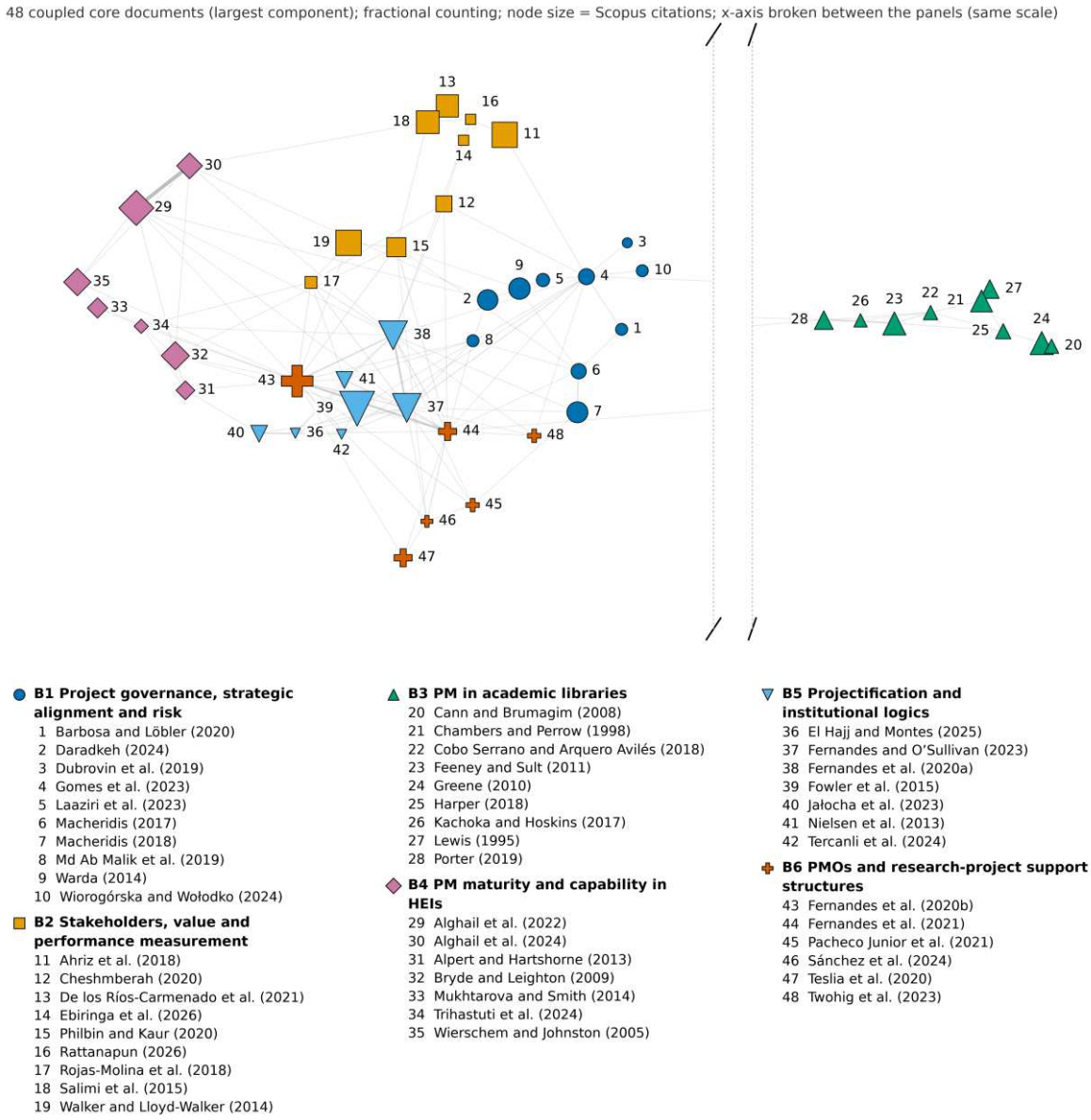


Figure 7. Bibliographic-coupling network of the 48 coupled core documents (largest component; fractional counting; association strength; resolution 1.0; layout repulsion 0, cluster membership unchanged). Nodes are numbered and listed by cluster in the key; node size is Scopus citations. The x-axis is broken between the panels (same scale) because cluster B3 lies far from the other five clusters.

5. Systematic synthesis

5.1 Characteristics of the included studies

The 74 included studies were published between 1989 and 2026, with 38 appearing since 2020, and come from 34 countries, led by the United States (10), the United Kingdom, Ukraine and Russia (5 each). Most are qualitative case studies or practice reports (37), followed by surveys (19), model- or method-development studies (10) and conceptual papers or reviews (8). The PM construct is most often the individual project (25 studies), followed by programmes (10), portfolios (10), maturity or capability (8), delivery methodologies such as agile, lean or PMBOK (8), PMOs and support structures (7), and project governance (6). Ownership is not stated in 45 studies and public in 20; only 9 contain any evidence from non-state institutions, and none analyses ownership as a variable. Six themes emerged from the synthesis (Table 7).

Table 7. Thematic synthesis of the included studies

Theme	Studies	PM principles examined	Synthesised findings
A. Strategic alignment and portfolio management	10	Portfolio selection and prioritisation; strategic alignment; MCDM; balanced scorecard	Portfolio methods are feasible in universities and make strategic choices explicit, but evidence is mostly design-and-test; consensus and stakeholder expectations must be built into selection.
B. Project governance, accountability and institutional logics	9	Governance and decision rights; accountability; agile governance; boundary work	Project governance can coordinate units with university governance actors, but PM formalisation meets resistance and is often decoupled from academic work.
C. PM capability: maturity, PMOs and support structures	12	Maturity models; PMOs; communities of practice; critical success factors	HEIs show low-to-moderate PM maturity, especially in leadership and support structures; PMOs evolve through stages and are valued where adapted to academic work.
D. Change, quality and accreditation projects	17	Life-cycle planning; change management; lean; agile; programme management	Accreditation, regulatory compliance, curriculum reform, BPR and digitalisation are effectively run as projects, but success depends on leadership consistency, culture and resources.
E. Research, innovation and university–industry collaboration	16	Programme and PMO structures; hybrid PM; risk and knowledge management	Hybrid traditional–agile practices and PMO support improve resource use and stakeholder value in collaborative R&D; standard methods need adaptation to research uncertainty.
F. Support services and infrastructure	10	PMBOK, PRINCE and portfolio methods in libraries; stakeholder-interface systems for capital projects	Libraries and estates units adopt rightsized PM; owner-side capital-project management improves cost, time and communication outcomes.

5.2 Strategic alignment and portfolio management (RQ2)

The most direct link between PM and institutional strategy appears in studies of project portfolio management. Universities face many concurrent initiatives competing for scarce resources, and portfolio methods make prioritisation explicit. Barbosa and Löbler (2020) designed and field-tested a consensus-oriented artefact for selecting strategy-aligned projects, applied to 185 projects with participants from several faculties, and argued that university decision-making environments require consensus rather than purely technical scoring. Studies of IT portfolios combined COBIT 5

governance principles with multi-criteria methods to prioritise projects in Moroccan and Spanish universities (Ahriz et al., 2018; Laaziri et al., 2023; Valverde-Alulema & Llorens-Largo, 2021), while Cheshmberah (2020) optimised a public university's portfolio against the expectations of its board of trustees, faculty, researchers and ministry. Further studies linked portfolio maturity choices to cost (Kononenko & Kpodjedo, 2022), adapted the strategy of universities as project-oriented organisations through balanced scorecards (Babaiev et al., 2017), and framed programme and project management as a lever of national university competitiveness (Sorokin & Yu, 2024). Survey evidence from public universities in Malaysia and from public and private universities in Bogotá shows that project leadership, PM practices and the empowerment of indirect internal stakeholders are associated with the performance of strategic projects (Md Ab Malik et al., 2019; Muñoz & Chion, 2020). The theme demonstrates feasibility and makes strategic trade-offs explicit, but evidence on whether portfolio governance improves strategy implementation over time is absent; most studies are method demonstrations within a single institution.

5.3 Project governance, accountability and institutional logics (RQ2, RQ3)

A second theme is about the interaction of PM with the university's authorities. Macheridis (2017) illustrated that project governance can be utilized as a means of coordinating between the department and the university's board, authorities and management, and that the key to its operation is accountability, while also presenting an agile project approach that has the potential to strike a balance of managerial authority and academic autonomy within institutional policies (Macheridis, 2018). Other research projects show conflicts. Fowler et al. (2015) reported that PM was performed on a front stage as opposed to being performed on a back stage, with researchers accommodating PM in a formalised way, while keeping research practices backstage, in line with the concept of decoupling (Meyer & Rowan, 1977). Jałocha et al. (2023) found that there were specific logics in an EU-funded university project – problem-solving for action research, efficiency for PM and compliance for university management. An engineering school's projectification (El Hajj & Montes, 2025), a university living lab approach, combining prescriptive and agile approaches (Tercanli et al., 2024), governance choices in 191 joint PhD projects (Salimi et al., 2015) and a university–online programme manager partnership (Ramani et al., 2022), and even client-side PM in a university property division (Walker & Lloyd-Walker, 2014), all support the same finding: that PM governance must reflect, not override, academic logics and that resource control and accountability arrangements drive governance choice.

5.4 PM capability: maturity, PMOs and support structures (RQ2, RQ3)

Several studies assessed whether HEIs possess the organisational capability to manage projects. A benchmarking survey of a UK university found low overall PM maturity, particularly in leadership and project support structures, comparable to late-adopting business sectors (Bryde & Leighton, 2009); university IT departments similarly lagged their business peers, using mainly planning functions (Wierschem & Johnston, 2005). In Yemeni public universities, knowledge-process and

knowledge-infrastructure capabilities were associated with higher PM maturity (Alghail et al., 2022; Alghail et al., 2024), and in Mexico the PM maturity of engineering faculty was linked to industry partners' satisfaction (Rojas-Molina et al., 2018). Critical success factors identified in Indonesian universities form a hierarchy in which leadership and organisational support are causal drivers (Trihastuti et al., 2024). PMOs are documented as structures that standardise and support projects in HEIs (Sánchez et al., 2024), evolve through basic, intermediate and advanced stages in university research centres (Fernandes et al., 2021), and can be evaluated with balanced scorecards adapted to academic requirements (Philbin & Kaur, 2020). Professional networks such as a university-wide PM community of practice in a private research university and academic health system (Johnson et al., 2020), practitioner surveys of European research-project management units (Twohig et al., 2023) and a university PM centre linked to social responsibility in a private Peruvian university (Vásquez-Ramírez et al., 2025) illustrate alternative support models. The evidence consistently points to capability gaps, although it rests largely on perception surveys.

5.5 Change, quality and accreditation projects (RQ2, RQ3)

The largest theme treats institutional change as a project or programme. Studies document externally funded development projects as a model for change (Carter & Halsall, 2000), collaborative PM approaches for technology-enabled change across UK universities (Brown, 2013), organisational development combined with PM to achieve regulatory compliance (Cusick, 2005), and a large curriculum reform run by a project management team in three phases (Maaz et al., 2018). Accreditation is a recurrent application: a private college of pharmacy completed its accreditation self-study on schedule using a project life-cycle approach (Dominelli et al., 2007), a business college organised AACSB maintenance through PM tools (Cann & Brumagim, 2008), and a Kazakh university's accreditation-driven change project fell short because of inconsistent management decisions, limited support, organisational culture, funding constraints and weak PM practice (Mukhtarova & Smith, 2014). Quality projects (Zhang et al., 2024; De los Ríos-Carmenado et al., 2021), sustainability management systems (Pascu, 2015), the sustainability of Egyptian higher-education enhancement projects (Warda, 2014), lean improvement of an academic department (Rosete-Espinosa et al., 2025), agile transformation of university functions (Ivetić & Ilić, 2020), and digitalisation programmes (Teslia et al., 2020) complete the theme. The three non-state studies in this theme show PM used to implement business process re-engineering, where effective PM was one of seven critical success factors in Malaysian private HEIs (Ahmad et al., 2007), to run a digital pedagogical transformation as a change-management project in a private hotel-management school (Samkange & Earnhart, 2017), and to align accounting practices with a cloud ERP system in a private HEI (Austy & Tandiono, 2026).

5.6 Research, innovation and university–industry collaboration (RQ2)

University–industry R&D is the most theoretically developed application area. Fernandes and colleagues proposed and implemented a programme and project management office for collaborative

R&D (Fernandes et al., 2020b), mapped the PM values of six stakeholder groups in a major programme (Fernandes et al., 2020a), and derived a framework of 29 transversal and 30 contingent traditional and agile practices (Fernandes & O'Sullivan, 2023). Nielsen et al. (2013) found that PM success was not causally linked to project success in 25 collaborations but was linked to effective resource use. Risk-management capabilities, moderated by knowledge management, affected the performance of 188 university–industry projects (Daradkeh, 2024), and portfolio regulation explained how partners in joint laboratories adjust their project portfolios (Gomes et al., 2023). Other studies addressed innovation-project management systems in Russian and Ukrainian universities (Kalimullin et al., 2016b; Kalimullin et al., 2016a; Mironova et al., 2024; Dubrovin et al., 2019; Piterska et al., 2018), PM guidelines for research laboratories (Pacheco Junior et al., 2021), research-project performance evaluation (Wang & Liu, 2014), cross-border projects under crisis (Hryhoriv et al., 2023), assistant professors' PM practices (Alpert & Hartshorne, 2013) and knowledge-sharing barriers in R&D teams of Czech public and private universities (Lajčin & Guzoňová, 2023). The theme shows that standard methods require adaptation to research uncertainty and that hybrid approaches with dedicated support functions add value.

5.7 Support services and infrastructure (RQ2)

Academic libraries form a distinct, earlier stream. Libraries adopted structured PM methods, from PRINCE-like controls and survey-based frameworks in UK libraries (Chambers & Perrow, 1998) to PMBOK-guided repository projects (Greene, 2010), institution-wide project and portfolio processes (Feeney & Sult, 2011), rightsized PM (Harper, 2018), portfolio management during a major renovation (Porter, 2019), staff perceptions of PM techniques (Cobo Serrano & Arquero Avilés, 2018) and international PM within European university alliances (Wiorogórska & Wołodko, 2024). Estates and infrastructure studies show owner-side management of capital projects improving outcomes: a stakeholder-interface management system reduced conflicts, cost and time overruns in university infrastructure projects (Ebiringa et al., 2026), performance-based procurement improved construction delivery (Kashiwagi et al., 2003), and a design-management framework prioritised stakeholder and organisational factors in private-university campus construction (Zhao et al., 2026). These units demonstrate that PM can be institutionalised in administrative domains, yet their insights are rarely connected to institution-wide management.

5.8 Barriers and enablers of integration (RQ3)

Table 8 synthesises the barriers and enablers reported across themes. Leadership commitment and consistency, organisational support structures, adequate resources, stakeholder engagement and the adaptation of methods to academic work recur as enablers; bureaucracy, academic resistance, competing logics, low maturity and short-term or project-bound funding recur as barriers.

Table 8. Barriers and enablers of integrating PM into HEI management

Dimension	Barriers	Enablers	Key sources
Leadership and governance	Inconsistent management decisions; low senior support; centralised control	Committed, consistent senior leadership; clear decision rights and accountability	(Mukhtarova & Smith, 2014; Bryde & Leighton, 2009; Macheridis, 2017; Cusick, 2005)
Culture and logics	Academic resistance; competing collegial, managerial and compliance logics; ceremonial adoption	Accommodating, hybrid governance; internal champions; participatory approaches	(Fowler et al., 2015; Jałocha et al., 2023; Ivetić & Ilić, 2020; Brown, 2013)
Capability and structure	Low PM maturity; lack of support structures and trained staff	PMOs; communities of practice; knowledge-management capabilities	(Alghail et al., 2022; Fernandes et al., 2021; Johnson et al., 2020; Wierschem & Johnston, 2005)
Resources and finance	Limited funding; staff overload; project-bound funding ending post-project	Adequate financial resources; planning for continuance after funding	(Carter & Halsall, 2000; Ahmad et al., 2007; Pacheco Junior et al., 2021)
Stakeholders	Fragmented expectations; weak engagement of indirect stakeholders	Stakeholder mapping; empowerment; interface-management systems	(Cheshmberah, 2020; Muñoz & Chion, 2020; Ebiringa et al., 2026; Fernandes et al., 2020a)
Methods	Standard methods ill-suited to research uncertainty and academic autonomy	Hybrid traditional–agile and lean practices; rightsized tools	(Fernandes & O'Sullivan, 2023; Macheridis, 2018; Tercanli et al., 2024; Rosete-Espinosa et al., 2025; Harper, 2018)

5.9 Evidence on non-state institutions (RQ3)

Only nine included studies contain evidence from non-state institutions: seven set in private institutions (Vásquez-Ramírez et al., 2025; Dominelli et al., 2007; Johnson et al., 2020; Ahmad et al., 2007; Zhao et al., 2026; Samkange & Earnhart, 2017; Austy & Tandiono, 2026) and two with mixed public and private samples (Muñoz & Chion, 2020; Lajčin & Guzoňová, 2023). In the private-only studies ownership is incidental to the analysis: they document that PM can support accreditation, process re-engineering, digital transformation, enterprise-system implementation, capital projects and professional networks, but none asks whether or how private ownership, tuition dependence or competition change the role or effects of PM. The mixed-sample studies did not, on the evidence of their abstracts, compare public and private institutions. Any statement about PM in non-state HEIs therefore currently rests on inference from public-sector and mixed evidence, combined with the contextual literature on private-HE governance (Section 7).

6. Discussion

6.1 What the evidence shows

The review indicates that PM principles are applied across a wide range of institutional functions in higher education, from strategic portfolio choices and governance to accreditation, research

partnerships, libraries and estates. Read through the lens of project governance theory, the literature has moved from project-level techniques in service units towards portfolio, PMO and governance concerns, consistent with the broader evolution of PM research (Too & Weaver, 2014; Unger et al., 2012). Yet the evidence is thin where it matters most for institutional management: few studies examine the integration of PM into the institution-wide management system, outcome measures are rare and usually perceptual, and designs are dominated by single cases and method demonstrations. The finding that PM success is linked to efficient resource use rather than to project success in university–industry collaboration (Nielsen et al., 2013) suggests that the institutional value of PM may lie in resource stewardship and coordination rather than in the success of individual projects, a proposition worth testing.

6.2 Projectification meets academic logics

A recurring insight is that PM in universities is contested. Studies of research projectification and EU-funded projects show partial accommodation, front-stage compliance and competing logics (Fowler et al., 2015; Jałocha et al., 2023; El Hajj & Montes, 2025). Institutional theory anticipates this: formal structures adopted for legitimacy with funders and accreditors may be decoupled from academic work (Meyer & Rowan, 1977; DiMaggio & Powell, 1983), and actors draw on different logics to judge what counts as appropriate (Thornton & Ocasio, 1999). Studies that report successful integration, such as project governance as a coordination tool (Macheridis, 2017), agile approaches balancing authority and autonomy (Macheridis, 2018), and hybrid practice frameworks (Fernandes & O'Sullivan, 2023), share an emphasis on adapting PM to academic work rather than imposing corporate templates. This tension sharpens in non-state institutions, where managerial authority can displace academic leadership (Górska, 2026) and where owners' and foundations' interests may diverge from those of academic staff (Hidayati et al., 2023).

6.3 Capabilities, resources and dynamic adaptation

From a resource-based and dynamic-capabilities perspective (Barney, 1991; Teece et al., 1997), the maturity and PMO literature suggests that PM capability is a developable organisational resource. Its low levels in many HEIs (Bryde & Leighton, 2009; Wierschem & Johnston, 2005) and its association with knowledge capabilities (Alghail et al., 2022; Alghail et al., 2024) indicate that capability building is a precondition for strategic benefit. This matters for institutions facing turbulent environments, where the ability to reconfigure resources through portfolios of projects underpins adaptability.

6.4 What changes in non-state institutions?

Because direct evidence is lacking, the following reasoning is inferential. The contextual literature shows that private HEIs are more exposed to tuition dependence and financial vulnerability (Dorantes & Low, 2016; Teixeira & Amaral, 2007; Lee et al., 2020), operate under diverse and sometimes concentrated ownership and governance arrangements (Liu, 2020a; Liu, 2020b; Chau et al., 2022; Gonzalez-Perez et al., 2021), face specific regulatory and accreditation regimes (Papadimitriou et al., 2017; Dattey et al., 2014; Liu & Qureshi, 2026), and use strategic planning, internal resource-

allocation and risk-management practices that closely resemble PM without being framed as such (O'Sullivan, 2016; Fengcai et al., 2023; Sofyani et al., 2026; Alarcon et al., 2026). These features plausibly raise the salience of portfolio prioritisation, financial control and compliance projects in non-state HEIs, while concentrated owner authority may shorten decision chains but weaken collegial engagement, with consequences for the legitimacy and uptake of PM. In Uzbekistan, rapid sectoral expansion, state-designed marketisation (Qodirov et al., 2026), post-Soviet governance continuities (Azimbayeva, 2017), the shift towards financial autonomy and performance-based funding (Abdualimova et al., 2026), franchise and branch-campus partnerships (Ubaydullaeva, 2020; Ubaydullaeva, 2024) and the 2025 licensing requirements on capital, premises and profit reinvestment (Kun.uz, 2025) create precisely the conditions under which portfolio-based investment planning, PMO-supported compliance programmes and PM maturity could matter.

6.5 Research gaps (RQ4)

Table 9 classifies the gaps that the evidence supports.

Table 9. Research gaps supported by the review

Type	Gap	Evidence base
Empirical	Few studies measure institutional outcomes of PM (strategy implementation, efficiency, quality, sustainability); most report perceptions or single-case experience	Designs: 37 case/qualitative, 19 surveys; outcomes rarely measured
Theoretical	Intellectual base borrowed from generic PM and university–industry research; institutional, stakeholder and capability theories rarely used explicitly; no integrated model of PM within HEI management systems	Co-citation clusters C1–C4; only two theoretical anchors
Methodological	Predominance of single cases and cross-sectional perception surveys; no longitudinal, comparative or mixed-method designs linking PM capability to outcomes	Study characteristics (Section 5.1)
Contextual	Near absence of non-state evidence; ownership never analysed; Central Asia represented by one study	9 of 74 studies with any non-state evidence; no non-state research front; one Kazakh study
Practical	Little guidance on PMO design, portfolio governance or maturity development tailored to HEIs, and none for owner-governed private institutions	Support-service and capability studies are unit-specific

7. A framework for project management in non-state HEIs (RQ5)

Figure 8 integrates the synthesis into a moderated framework. Institutional antecedents (strategy and mission, leadership commitment, culture and academic logics, financial and human resources, regulatory and accreditation requirements, and stakeholder expectations) shape the development of PM capabilities (strategic alignment and portfolio selection, project governance and decision rights including PMOs, planning and resource allocation, risk and stakeholder management, quality, monitoring and evaluation, and hybrid delivery and maturity). These capabilities support institutional management processes (strategy implementation, academic–administrative coordination, quality assurance and accreditation, digital transformation, research and partnership management, and continuous improvement), which are expected to contribute to governance and accountability, effectiveness, efficient resource use, strategic delivery, adaptability and sustainability. Non-state

characteristics moderate these relationships, and academic autonomy and competing institutional logics act as a boundary condition. The relationships are propositions grounded in the reviewed evidence and in theory; they are not empirically validated (Table 10).

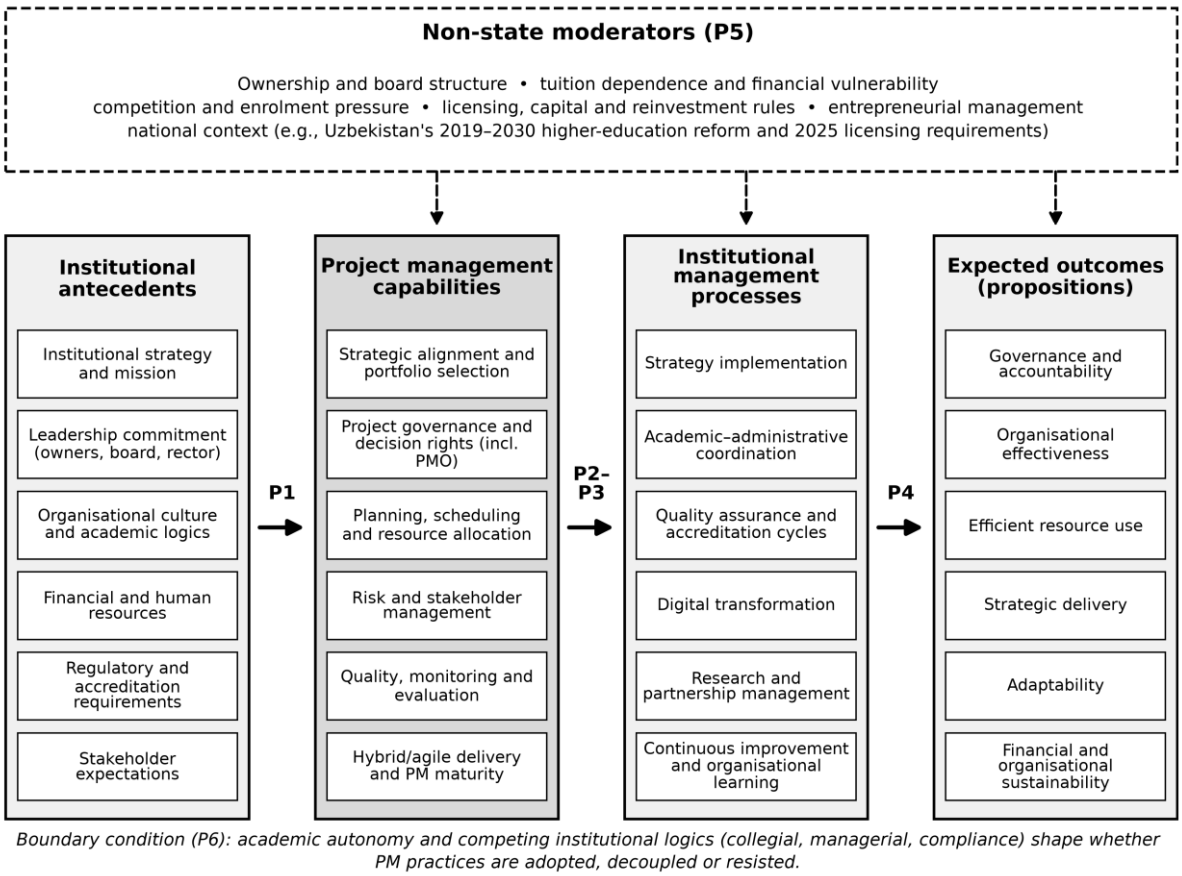


Figure 8. Conceptual framework of project management in the management systems of non-state HEIs (propositions P1–P6).

Table 10. Propositions and their evidential basis

Proposition	Statement	Basis	Status
P1	Leadership commitment, resource adequacy and external accountability pressures (accreditation, licensing, funders) are positively associated with HEI PM maturity and the establishment of PMO and portfolio functions.	(Bryde & Leighton, 2009; Mukhtarova & Smith, 2014; Trihastuti et al., 2024; Alghail et al., 2022; Dominelli et al., 2007; Cann & Brumagim, 2008)	Supported by multiple studies; association only
P2	Portfolio-based selection and prioritisation of initiatives, aligned with institutional strategy, improves strategy implementation by making trade-offs explicit and concentrating resources.	(Barbosa & Löbler, 2020; Ahriz et al., 2018; Cheshmberah, 2020; Laaziri et al., 2023; Md Ab Malik et al., 2019; Muñoz & Chion, 2020)	Feasibility shown; effects on implementation untested
P3	Project governance structures with clear decision rights and accountability improve academic–administrative coordination when they accommodate academic autonomy through hybrid or agile arrangements.	(Macheridis, 2017; Macheridis, 2018; Fernandes & O'Sullivan, 2023; Tercanli et al., 2024; Fernandes et al., 2020b; Fernandes et al., 2021)	Case-based support

Proposition	Statement	Basis	Status
P4	Institutionalised PM capability contributes to efficient resource use, timely delivery of quality and accreditation projects, and adaptability more than to the success of any single project.	(Nielsen et al., 2013; Dominelli et al., 2007; Ebiringa et al., 2026; Kashiwagi et al., 2003; Ahmad et al., 2007; Rosete-Espinosa et al., 2025)	Indicative; outcomes rarely measured
P5	In non-state HEIs, tuition dependence, competitive pressure and capital and reinvestment rules strengthen the effect of portfolio governance and financial control on sustainability, while concentrated owner authority accelerates decisions but may weaken collegial acceptance of PM.	(Dorantes & Low, 2016; Teixeira & Amaral, 2007; Lee et al., 2020; Liu, 2020a; Górska, 2026; Hidayati et al., 2023; Kun.uz, 2025)	Theory- and context-derived; no direct PM evidence
P6	Where PM is imposed against dominant academic logics it is likely to be adopted ceremonially and decoupled from core work; participatory, rightsized adoption increases genuine integration.	(Fowler et al., 2015; Jałocha et al., 2023; El Hajj & Montes, 2025; Meyer & Rowan, 1977; Thornton & Ocasio, 1999)	Supported by qualitative studies

8. Contributions, implications, limitations and future research

8.1 Theoretical and methodological contributions

Theoretically, the study reframes PM in higher education as a component of institutional management systems rather than a set of project-level techniques, integrates project governance, institutional, stakeholder and capability perspectives into a single framework, and specifies how non-state characteristics might moderate PM's role. Methodologically, it demonstrates that conventional Boolean strategies in this field retrieve a predominantly irrelevant literature and that proximity operators, validated by precision sampling, offer a reproducible alternative; it also illustrates stabilitytested science mapping, interpreting only clusters robust to the clustering resolution, and the separation of systematic evidence from purposive contextual literature.

8.2 Practical and policy implications

Owners and boards/rectors of non-state HEIs can use the review to work through the building of PM capability in stages: establishing portfolio governance (to connect projects to the strategy and to investment and reinvestment plans) (Messner et al., 2022); developing PMO or other support function with roles adapted for academic work (Fernandes et al., 2020b; Fernandes et al., 2021); assessing and developing PM maturity (Bryde & Leighton, 2009); and using hybrid or agile approaches, while maintaining presence of academics in PM (Macheridis, 2018; Fernandes & O'Sullivan, 2023). Natural first portfolios are Accreditation, Licensing Compliance, Digital Systems and Campus Investments. The results indicate that for regulators like the higher education sector of Uzbekistan, a licensing and accreditation system that already has a need to development concepts, five-year plans and reinvestment of profit (Kun.uz, 2025) can motivate transparent reporting of projects and projects' portfolio, and their capability development, rather than just compliance. Such implications are inferential and they need to be tested and validated.

8.3 Limitations

Several limitations qualify the findings. The search covered one database, Scopus, and English-language records, which under-represents regional and Russian-language research relevant to Central Asia; the proximity operator increased precision at some cost to recall, partly mitigated by the non-state supplement and the W/15 sensitivity set. Title and abstract screening was performed by one reviewer, so inter-rater reliability could not be estimated. Full texts could not be retrieved for 68 of the 86 reports, which were therefore assessed on titles, abstracts and metadata; eligibility decisions and extraction for these studies rest on summary information, and methodological quality was not formally appraised. The bibliometric corpus is small, and network indicators should be read descriptively. Citation counts reflect visibility rather than quality. Finally, evidence on non-state institutions is so limited that the framework's non-state propositions rest on theory and contextual literature rather than direct evidence.

8.4 Future research

Future research should (1) compare public and non-state HEIs on PM maturity, portfolio governance and outcomes using multi-institution surveys with objective indicators; (2) conduct longitudinal case studies of PMO establishment and portfolio governance in non-state universities, including Uzbek institutions adapting to the 2025 licensing rules; (3) test propositions P1–P6 using structural or configurational methods; (4) examine how ownership type (non-profit, for-profit, religious, foundation-owned) conditions decision rights and the legitimacy of PM; (5) develop and validate an HEI-specific PM maturity instrument; and (6) extend the evidence base to Russian- and Uzbek-language literature and to additional databases.

9. Conclusion

This study set out to establish how PM principles can be integrated into the management systems of non-state HEIs. The answer is necessarily qualified. The literature shows that PM principles are applied to portfolio selection, project governance, PMOs, change and accreditation projects, research partnerships and support services, and that capability, leadership, resources and adaptation to academic logics condition their value. It also shows that this institutional literature is small, fragmented and theoretically derivative, dominated by single cases, and almost silent on non-state institutions. Addressing RQ1, research has grown since 2013 and is structured around portfolio and IT governance, maturity and PMOs, university–industry R&D, change and support services. Addressing RQ2 and RQ3, the principles most linked to HEI management are portfolio alignment, governance and decision rights, PMO support and hybrid delivery, enabled by leadership consistency and support structures and constrained by competing logics, low maturity and resource limits. Addressing RQ4, empirical, theoretical, methodological, contextual and practical gaps remain, the most serious being the absence of non-state evidence. Addressing RQ5, the proposed framework offers six testable propositions for how PM capabilities, moderated by ownership, finance, competition and

regulation, could strengthen governance, strategy implementation and sustainability in non-state universities such as those now expanding in Uzbekistan.

Declarations

Ethics approval and consent to participate.
Not applicable: this study is a review of published literature and involved no human participants.

Funding. Not applicable.

Conflict of interest. Not applicable.

Data availability. Search strings, Scopus exports (record identifiers), screening decisions, extraction matrix, VOSviewer inputs, map and network files and analysis scripts are provided as supplementary material.

Competing interests. The authors declare no competing interests.

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Appendix A. Studies included in the systematic review

Table A1. Characteristics of the 74 included studies (Full text: No = assessed on title, abstract, keywords and metadata)

Study	Country	Unit / setting	Design	PM construct	Theme	Ownership	Full text
Ahmad et al. (2007)	Malaysia	Three private HEIs (BPR)	Multiple case	Project	D Change/QA	Private	No
Ahriz et al. (2018)	Morocco	IT function	MCDM model + application	Portfolio	A Portfolio	Not stated	Yes
Alghail et al. (2024)	Yemen	PM departments, 10 universities	Survey (PLS-SEM, n=352)	Maturity/capability	C Capability	Not stated	No
Alghail et al. (2022)	Yemen	PM departments, 10 universities	Survey (PLS-SEM, n=352)	Maturity/capability	C Capability	Not stated	No
Alpert and Hartshorne (2013)	USA	Assistant professors' research projects	Grounded theory (n=22)	Project	E Research/UIC	Not stated	No
Austy and Tandiono (2026)	Indonesia	Cloud ERP implementation	Single case (n=14)	Project	D Change/QA	Private	No
Babaiev et al. (2017)	Ukraine	Universities as project-oriented organisations	Correlational + method development	Portfolio	A Portfolio	Not stated	Yes
Barbosa and Löbler (2020)	Brazil	Whole university	Design science (artefact, field test)	Portfolio	A Portfolio	Not stated	Yes
Brown (2013)	UK	Multi-university change programme	Case reflection	Programme	D Change/QA	Not stated	Yes
Bryde and Leighton (2009)	UK	Whole university	Benchmarking survey (n=110)	Maturity/capability	C Capability	Not stated	No
Cann and Brumagim (2008)	USA	Business college accreditation	Case	Project	D Change/QA	Not stated	No
Carter and Halsall (2000)	UK	Funded development projects	Case study / reflection	Project	D Change/QA	Not stated	Yes

Study	Country	Unit / setting	Design	PM construct	Theme	Ownership	Full text
Chambers and Perrow (1998)	UK	University libraries	Survey + case	Methodology	F Services	Public	No
Cheshmberah (2020)	Iran	Public university	Stakeholder analysis + optimisation	Portfolio	A Portfolio	Public	Yes
Cobo Serrano and Arquero Avilés (2018)	Spain	University libraries	Survey	Maturity/capability	F Services	Public	No
Cusick (2005)	Australia	Regulatory-compliance change	Case (OD + PM)	Project	D Change/QA	Not stated	No
Daradkeh (2024)	UAE	188 university-industry projects	Survey (SEM)	Project	E Research/UIC	Not stated	No
De los Ríos-Carmenado et al. (2021)	Spain + 19 countries	67 universities	Comparative analysis	Governance	D Change/QA	Not stated	No
Dominelli et al. (2007)	USA	Accreditation self-study	Case + post-study survey	Project	D Change/QA	Private non-profit	No
Dubrovin et al. (2019)	Russia	Innovation/project system	Survey / rating method	Programme	E Research/UIC	Public	No
Ebiringa et al. (2026)	Nigeria	Infrastructure projects, 12 universities	Mixed methods + field validation	Project	F Services	Public	Yes
El Hajj and Montes (2025)	Lebanon	Engineering school	Interviews	Governance	B Governance	Not stated	No
Feeney and Sult (2011)	USA	University library	Case description	Portfolio	F Services	Public	No
Fernandes and O'Sullivan (2023)	Portugal	University-industry programme	Case (30 interviews)	Methodology	E Research/UIC	Not stated	No
Fernandes et al. (2020a)	Portugal	University-industry programme	Single large case	Programme	E Research/UIC	Not stated	No
Fernandes et al. (2020b)	Portugal	University-industry programmes	Two case studies	PMO/support	E Research/UIC	Not stated	No
Fernandes et al. (2021)	Global	University research centres	Survey (n=370)	PMO/support	C Capability	Not stated	Yes
Fowler et al. (2015)	Sweden	Research groups	Interviews (n=20)	Governance	B Governance	Public	No
Gomes et al. (2023)	Brazil	Joint university-industry labs	Multiple case + ethnography	Portfolio	E Research/UIC	Not stated	No
Greene (2010)	Ireland	University library	Case description	Methodology	F Services	Public	No
Harper (2018)	USA	University library	Case description	Methodology	F Services	Public	Yes
Hryhoriv et al. (2023)	Ukraine	Cross-border projects	Case + scenario/SWOT	Project	E Research/UIC	Public	Yes
Ivetić and Ilić (2020)	Serbia	Whole university	Conceptual review	Methodology	D Change/QA	Not stated	Yes

Study	Country	Unit / setting	Design	PM construct	Theme	Ownership	Full text
Jałocha et al. (2023)	Poland	EU-funded project	Instrumental case	Governance	B Governance	Public	No
Johnson et al. (2020)	USA	University + health system	Case (community of practice)	PMO/support	C Capability	Private non-profit	No
Kalimullin et al. (2016a)	Russia	Innovation projects	Modelling + statistics	Programme	E Research/UIC	Not stated	No
Kalimullin et al. (2016b)	Russia	Human-resource development	Modelling / conceptual	Project	E Research/UIC	Not stated	No
Kashiwagi et al. (2003)	USA	Capital construction	Field test	Project	F Services	Public	No
Kononenko and Kpodjedo (2022)	Ukraine	Technical university	Method development + application	Portfolio	A Portfolio	Not stated	Yes
Laaziri et al. (2023)	Morocco	IT portfolio	MCDM method	Portfolio	A Portfolio	Not stated	No
Lajčin and Guzoňová (2023)	Czechia	R&D project teams, public and private universities	Interviews + survey	Project	E Research/UIC	Public and private	Yes
Maaz et al. (2018)	Germany	Medical curriculum reform	Practice report	Programme	D Change/QA	Public	No
Macheridis (2017)	Sweden	University department	Case study	Governance	B Governance	Public	No
Macheridis (2018)	Sweden	University department	Case study	Methodology	B Governance	Public	No
Md Ab Malik et al. (2019)	Malaysia	Strategic transformation projects	Survey (PLS)	Project	A Portfolio	Public	No
Mironova et al. (2024)	Russia	University sector	Conceptual / document analysis	Programme	E Research/UIC	Not stated	No
Mukhtarova and Smith (2014)	Kazakhstan	Economic university	Critical review of change project	Project	D Change/QA	Public	No
Muñoz and Chion (2020)	Colombia	Strategic projects, public and private universities	Survey (SEM, n=356)	Project	A Portfolio	Public and private	No
Nielsen et al. (2013)	Denmark	25 university-industry collaborations	Longitudinal multi-case	Project	E Research/UIC	Not stated	No
Pacheco Junior et al. (2021)	Brazil	Research laboratories	Case study	Project	E Research/UIC	Public	No
Pascu (2015)	Romania	Whole university	Conceptual	Project	D Change/QA	Not stated	No
Philbin and Kaur (2020)	UK	University PMO	Longitudinal case (4 years)	PMO/support	C Capability	Not stated	No
Piterska et al. (2018)	Ukraine	University-state-business innovation	Method development	Programme	E Research/UIC	Not stated	No
Porter (2019)	USA	Research library renovation	Grounded-theory case	Portfolio	F Services	Not stated	No

Study	Country	Unit / setting	Design	PM construct	Theme	Ownership	Full text
Ramani et al. (2022)	USA	University-OPM partnership	Case (activity theory)	Project	B Governance	Not stated	Yes
Rojas-Molina et al. (2018)	Mexico	Engineering faculty	Survey / case	Maturity/capability	C Capability	Public	No
Rosete-Espinosa et al. (2025)	Mexico	Academic department	Action/case study	Methodology	D Change/QA	Not stated	No
Salimi et al. (2015)	Netherlands	191 joint PhD projects	Quantitative (project data)	Governance	B Governance	Not stated	No
Samkange and Earnhart (2017)	Switzerland	Digital pedagogical transformation	Case	Programme	D Change/QA	Private for-profit	No
Sánchez et al. (2024)	Colombia	HEI sector	Literature review	PMO/support	C Capability	Not stated	No
Sorokin and Yu (2024)	Russia/China/India	National HE systems	Comparative / document analysis	Programme	A Portfolio	Not stated	Yes
Tercanli et al. (2024)	Netherlands	University living lab	Case (boundary work)	Methodology	B Governance	Not stated	No
Teslia et al. (2020)	Ukraine	Whole university	Conceptual (systems engineering)	Programme	D Change/QA	Not stated	Yes
Trihastuti et al. (2024)	Indonesia	4 universities	Interviews + DEMATEL/ISM	Maturity/capability	C Capability	Not stated	No
Twohig et al. (2023)	EU/EEA/UK	Research project management units	Practitioner survey	PMO/support	C Capability	Not stated	No
Valverde-Alulema and Llorens-Largo (2021)	Spain/Ecuador	IT portfolios of universities	Mixed methods (rubric)	Portfolio	A Portfolio	Not stated	No
Vásquez-Ramírez et al. (2025)	Peru	PM centre / social responsibility	Graduate survey (n=384)	PMO/support	C Capability	Private non-profit	No
Walker and Lloyd-Walker (2014)	Australia	Property services division	Single case (interviews)	Maturity/capability	B Governance	Not stated	No
Wang and Liu (2014)	China	Research project management	Evaluation model (FAHP)	Project	E Research/UIC	Not stated	No
Warda (2014)	Egypt	HE enhancement projects	Survey (n=159)	Project	D Change/QA	Public	No
Wierschem and Johnston (2005)	USA	University IT departments	Mail survey	Maturity/capability	C Capability	Not stated	No
Wiorogórska and Wołodko (2024)	Poland/EU	Libraries in university alliances	Practice case	Project	F Services	Not stated	No
Zhang et al. (2024)	China	'Quality engineering' projects	Model + analysis	Project	D Change/QA	Not stated	No
Zhao et al. (2026)	China	Private-university campus construction	Case + expert AHP	Project	F Services	Private	No