

# Information Infrastructure and Institutional Strategy: Academic Libraries in the Higher Education Policy Landscape

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## Abstract

*Academic libraries increasingly serve as strategic components of higher education governance, extending beyond their traditional role as information repositories to support institutional sustainability, digital transformation, policy implementation, and knowledge production. This study reviews 36 sources from library and information science, higher education management, and related management fields to examine the role of academic libraries within institutional strategy and information infrastructure. Using narrative synthesis supported by bibliometric mapping, the study identifies eight recurring themes: green and sustainable libraries, digital transformation and leadership, bibliometric and methodological research, institutional and strategic management, digital information services, digital literacy and instruction, digital leadership, and the broader library and information science research landscape.*

*Scholarly attention increased substantially after 2020, particularly around generative artificial intelligence, digital leadership, and policy-oriented research, while sustainability research has developed since 2008. The findings are interpreted through a conceptual framework linking institutional strategy, sustainability, digital transformation, and higher education policies and programmes. Despite limitations arising from the small corpus and narrative synthesis approach, the study highlights the need for further empirical and comparative research. Overall, academic libraries should be recognised as strategic institutional assets and actively integrated into higher education policy planning, particularly in infrastructure, pedagogy, digital transformation, and governance.*

**Keywords:** Academic Libraries, Information Infrastructure, Institutional Strategy, Higher Education Policy, Sustainability, Digital Transformation, Bibliometric Analysis.

## Introduction

Higher education institutions worldwide are experiencing significant pressures arising from financial constraints, accountability requirements, digitalisation, sustainability priorities, and the rapid integration of artificial intelligence into education, research, and administration. Within this changing environment, academic libraries occupy a complex position. Although often treated as supplementary service units and vulnerable to budget reductions, they also constitute critical institutional infrastructure by providing information resources, research support, learning environments, and information and digital

literacy services that directly contribute to university objectives.

This study examines academic libraries as strategic information infrastructure embedded within institutional strategies. An integrative review approach is used to synthesise recent literature from library and information science (LIS) and higher education management and to develop relevant policy implications. The study is based on the premise that information infrastructure extends beyond technical and logistical functions and represents a strategic institutional asset. Academic libraries support scholarly communication, research and teaching, data and information literacy, and increasingly provide spaces for institutional innovation, including experimentation with generative artificial intelligence and other emerging technologies.

Academic libraries are also becoming increasingly integrated into institutional sustainability strategies. Their buildings, resource consumption, and operational practices can serve as tangible expressions of universities' environmental commitments. Accordingly, libraries occupy a multidimensional position within higher education governance, connecting infrastructural, pedagogical, sustainability, technological, and strategic functions. Growing scholarly attention to these roles reflects the broader transformation of academic libraries from traditional information repositories into strategic institutional assets. The green library movement, for example, has developed since Antonelli's (2008) early work highlighting the role of libraries in environmentally responsible design and operation.

These studies established a normative basis for integrating sustainability into library services, followed by empirical research and systematic reviews that further developed the field. Sustainability has also been examined in relation to the United Nations Sustainable Development Goals, highlighting the broader contribution of libraries to sustainable development. A second research stream focuses on the digital transformation of academic libraries, particularly their responses to generative AI and changing demands for knowledge facilitation. Libraries are increasingly expected to move beyond their traditional roles as information repositories and become active contributors to knowledge creation and innovation. Research has also examined changing discipline-specific information service requirements in the era of digital intelligence.

A third stream applies bibliometric and scientometric methods to examine the development of library and information science (LIS), including research themes, authorship, and citation patterns. Studies across countries such as Namibia, Tanzania, India, and Romania demonstrate that LIS priorities vary according to institutional development, resource availability, and policy environments. The fourth stream addresses institutional strategy and governance, examining issues such as the use of IT capabilities, digital leadership, innovative work behaviour, and institutional capacity for creativity and innovation. Although substantial research exists across these interconnected areas, they are generally examined separately. Sustainability, digital transformation, bibliometric development, and institutional strategy have therefore received limited integrated attention. Consequently, a unified understanding of academic libraries as strategic information infrastructure within higher education policy remains underdeveloped.

This study addresses the identified research gap through a structured narrative synthesis of 36 peer-reviewed and practitioner sources, supplemented by descriptive bibliometric mapping of the selected literature. Rather than providing primary empirical evidence, the study synthesises existing scholarship to describe the current state of research and develop an overarching conceptual model linking institutional strategy with the academic library as information infrastructure. This synthesis is important because higher education institutions increasingly operate under accountability systems that require clear alignment between institutional investments and strategic missions, including research productivity, student success, community engagement, and environmental sustainability. Academic libraries contribute to each of these areas through research collections and discovery systems, information literacy programmes, sustainability-related facilities and procurement, and institutional responses to generative artificial intelligence. Viewing libraries as information infrastructure rather than conventional service units therefore provides a stronger basis for understanding their strategic contribution to institutional goals.

The infrastructural perspective also has implications for information systems and public administration research. IT capabilities can be understood as sources of organisational resilience and adaptive capacity rather than simply operational

costs. However, academic libraries have distinctive governance characteristics, combining professional autonomy, pedagogical responsibilities, and accountability to both academic governance bodies and university administration. Consequently, generic IT capability models developed in other organisational settings cannot be applied without contextual adaptation. The conceptual model proposed in this study therefore integrates the distinctive strategic, infrastructural, pedagogical, and governance roles of academic libraries.

The remainder of the paper presents the materials and methods, including the literature review, thematic categorisation, and descriptive bibliometric analysis. The results and discussion examine the distribution of studies across themes and time and present the proposed conceptual framework and its implications for institutional strategy and higher education policy. The limitations section discusses the scope of the narrative synthesis and identifies directions for future empirical research, followed by a conclusion summarising the key findings.

## Materials and Methods

This study employs a narrative-synthesis review supplemented by descriptive bibliometric mapping. The corpus comprises 36 sources published between 2008 and 2026 across library and information science, higher education administration, management, and information systems. The sources include peer-reviewed journal articles, a dataset publication, and systematic reviews. The complete reference corpus was retained as the unit of synthesis.

The analysis was conducted in three stages. First, each source was reviewed and coded according to its primary substantive focus, producing eight thematic categories: green and sustainable libraries; institutional and strategic management; bibliometric and methodological scholarship; digital information services; digital transformation and policy; digital literacy and instruction; digital leadership; and the broader library and information science research environment. Coding was conducted by one reviewer based on the abstracts and main contributions of each source. Where a source addressed multiple themes, it was assigned to the category most closely aligned with the study objectives to maintain exclusive thematic counts. Second, descriptive bibliometric indicators were calculated from the coded corpus, including publication trends by year and four-year

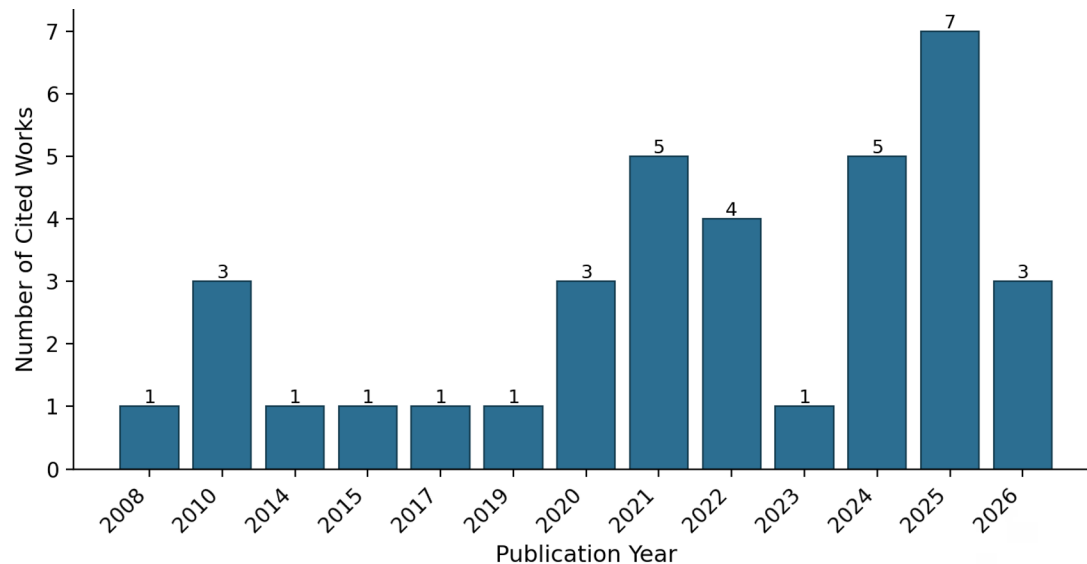
periods, thematic frequencies, and source-journal frequencies. These indicators were derived directly from the reference list rather than a database search and therefore describe the reviewed corpus rather than the broader LIS literature.

Third, the thematic findings were synthesised into a conceptual framework illustrating how academic libraries function as information infrastructure within institutional strategy. The framework was developed inductively from recurring relationships in the literature, particularly those connecting sustainability and digital transformation, bibliometric self-assessment and institutional governance, and digital capability and leadership. The framework is interpretive and has not been empirically validated.

Spreadsheet and scripting procedures were used to generate frequency counts and descriptive statistics, forming the basis of Tables 1 and 2 and Figures 1, 2, 3, and 5. Figure 4 represents an interpretive conceptual diagram rather than a statistical visualisation, depicting the academic library as an information-infrastructure hub connecting sustainability, institutional strategy, digital capability, leadership, and bibliometric governance. No formal risk-of-bias assessment, effect-size pooling, or systematic database search and screening process was undertaken. The fixed-corpus approach is consistent with the narrative-synthesis purpose of the study but limits the generalisability and comprehensiveness of the findings. These methodological limitations are addressed further in the limitations section.

## Results and Discussion

The temporal distribution of the corpus shown in Figure 1 indicates a strong concentration of research after 2020. Of the 36 sources reviewed, 20 were published between 2021 and 2026, compared with 16 published between 2008 and 2020. The earliest source, Antonelli (2008), addressed the emerging green library movement and represents the earliest thematic focus in the corpus. Publication activity peaked in 2025, with seven sources, followed by 2021 and 2024, with five sources each. This pattern reflects the growing scholarly attention to digital transformation, sustainability, and bibliometric research and suggests that academic libraries have increasingly become a significant area of higher education scholarship.



**Figure 1:** Temporal Distribution of the Reviewed Literature by Publication Year (2008–2026).

The post-2020 increase in publications coincides with three broader developments that may partly explain the expansion of research. First, the shift towards remote and blended learning increased attention to digital access, information literacy, and library service delivery in distance-learning environments. Second, the growing institutionalisation of sustainability reporting and campus sustainability initiatives created greater demand for research on the role of libraries in institutional sustainability. Third, particularly in the later years of the review period, research on digital information services expanded from traditional discovery and repository functions towards proactive knowledge facilitation and the use of artificial intelligence in reference and instructional services. These developments cannot be interpreted as causal drivers; however, their coincidence with

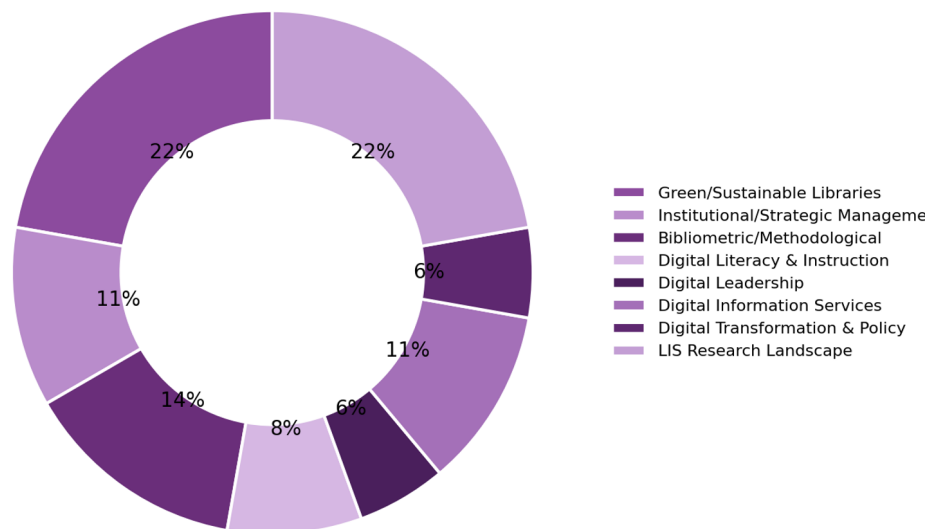
greater thematic diversification and publication activity supports their relevance to the observed research expansion.

The thematic distribution of the reviewed corpus is presented in Table 1. Green and sustainable libraries and broader library and information science research are the most represented categories, with eight sources each. Bibliometric and methodological scholarship accounts for five sources, while institutional and strategic management and digital information services each include four. Three sources focus on digital literacy and instruction, and two sources each address digital leadership and digital transformation and policy. As illustrated in Figure 2, sustainability and disciplinary self-assessment together account for almost half of the reviewed corpus, indicating their central position in contemporary academic library research.

**Table 1:** Thematic Categorization of the Reviewed Literature (N=36).

| Thematic Category                           | n | Representative Sources                                                                                                                                                                 |
|---------------------------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green and Sustainable Libraries             | 8 | Jankowska and Marcum (2010); Kamińska et al. (2022); Kurbanoglu and Boustany (2014); Ogbolu et al. (2026); Sarkar (2020)                                                               |
| LIS Research Landscape                      | 8 | Gillum et al. (2023); Gupta and Gul (2022); Herring (2010); Kim and Abbas (2021); Ma and Lund (2021); Ndenje-Sichalwe and Elia (2022); Sahoo et al. (2020); Shatona and Mwiyale (2025) |
| Bibliometric and Methodological Scholarship | 5 | Bordignon (2021); Cretu and Grosseck (2025); Donthu et al. (2021); Mayr and Scharnhorst (2015)                                                                                         |
| Institutional and Strategic Management      | 4 | Goh and Arenas (2020); Marczewska et al. (2024); Pacheco et al. (2025); Yang and Xia (2021)                                                                                            |
| Digital Information Services                | 4 | Kim (2025); Nepali and Tamang (2022); Wani (2023); Zhang et al. (2025)                                                                                                                 |
| Digital Literacy and Instruction            | 3 | Fühles-Ubach et al. (2026); Mufeti (2020); Subaveerapandiyan et al. (2022)                                                                                                             |
| Digital Leadership                          | 2 | Erhan et al. (2022); Olabiyi et al. (2025)                                                                                                                                             |
| Digital Transformation and Policy           | 2 | Souli and Pierrakeas (2025)                                                                                                                                                            |

**Note:** N=Number of sources assigned to each thematic category.



**Figure 2:** Proportional Thematic Distribution of the Reviewed Literature.

The sustainability literature in the examined corpus shows a coherent development. Early research on green libraries (Antonelli, 2008) established an ethical foundation for environmentally responsible library design, operations, and collection policies, framing sustainability as both a moral responsibility and a response to resource constraints. This foundation was further developed through research on sustainability in academic libraries (Jankowska and Marcum, 2010). Kurbanoglu and Boustany (2014) subsequently connected green information literacy with broader information literacy pedagogy. More recent studies have adopted systematic and bibliometric approaches to examine sustainability, with Kamińska et al. (2022) mapping the sustainability discourse in library and information science and Bordignon (2021) linking library sustainability research with the United Nations SDGs.

Research beyond the library field has also provided useful methodological precedents. Systematic literature reviews have been used to integrate evidence on lean and sustainability across the building life cycle, while Ogbolu et al. (2026) presented a conceptual model of institutional sustainability maturity in higher education. These studies provide methodological foundations for synthesizing sustainability scholarship. The literature itself shows a shift from early descriptive and normative discussions towards more systematic and framework-based approaches. Antonelli (2008) and Jankowska and Marcum (2010) focused primarily on practical sustainability in libraries, documenting environmentally responsible projects and their

ethical and operational implications. Kurbanoglu and Boustany (2014) expanded this perspective by presenting sustainability as an educational competency through pedagogy. Kamińska et al. (2022) marked a methodological development by applying systematic review protocols to a field previously dominated by narrative synthesis. Ogbolu et al. (2026) extended this approach by proposing a maturity model applicable across HEIs, positioning the academic library within a broader institutional sustainability context.

Overall, this development reflects a broader shift from viewing sustainability as a unit-level concern to understanding it as a strategic governance issue for the institution as a whole. Another major theme in the reviewed corpus is the LIS research field, particularly national and disciplinary bibliometric studies. These include research on LIS scholarship in Namibia (Shatona and Mwiyale, 2025), postgraduate research topics and methods in Tanzania (Ndenje-Sichalwe and Elia, 2022), and research trends in India (Gupta and Gul, 2022). Sahoo et al. (2020) examined authorship patterns and highly cited LIS journal articles, while Ma and Lund (2021) analysed research topics and methods across the LIS field. Kim and Abbas (2021) further examined the influence of technology on the future direction of LIS research.

Other studies extended this disciplinary self-assessment to related fields. Gillum et al. (2023) conducted a content analysis of themes in health sciences librarianship, while Herring (2010) examined research on distance education and libraries. Together, these studies demonstrate a sustained tradition of

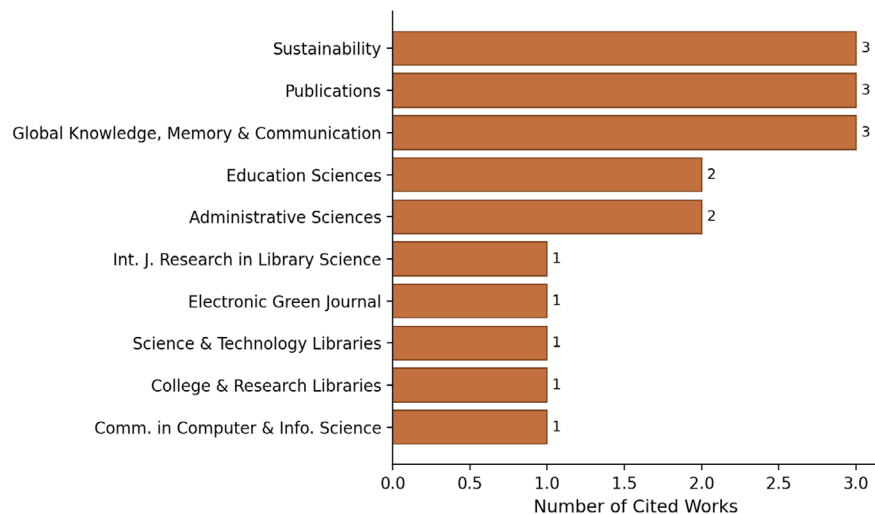
disciplinary self-assessment using bibliometric and content-analysis methods and show how LIS scholarship is monitored across national and institutional contexts. The geographical diversity of the corpus is also significant. Much of the institutional strategy and digital leadership literature originates from well-resourced or higher-income higher education systems, whereas many bibliometric LIS studies are situated in lower- and middle-income contexts. Examples include research on digital literacy in Africa (Subaveerapandiyan et al., 2022), professional contexts in Africa (Ndenje-Sichalwe and Elia, 2022), Namibia (Shatona and Mwiyale, 2025), and India (Gupta and Gul, 2022). This distribution suggests that bibliometric self-assessment may be relatively accessible because it relies primarily on citation databases rather than extensive primary research, surveys, or institutional collaboration. Such methodological accessibility may partly explain the strong representation of bibliometric studies in the corpus.

This pattern also has policy implications. Building national capacity for bibliometric research could contribute to a more equitable LIS research infrastructure, particularly in resource-constrained settings. Targeted policy support for bibliometric research capacity may therefore strengthen national science and higher education systems. The distribution of reviewed studies across leading journals is presented in Table 2. The results are shown in Figure 3. The corpus includes multiple studies from Sustainability, Memory and Communication, Global Knowledge, Publications, Administrative Sciences, and Education Sciences. This journal distribution demonstrates the multidisciplinary character of contemporary academic library research, with relevant scholarship appearing across specialist LIS, sustainability, and higher education management outlets. It further suggests that academic library scholarship is becoming increasingly connected to institutional strategy, sustainability, and higher education governance.

**Table 2:** Distribution of the Reviewed Corpus by Leading Source Journal.

| Source Journal                                 | n  | Primary Disciplinary Focus                                                                         |
|------------------------------------------------|----|----------------------------------------------------------------------------------------------------|
| Sustainability                                 | 2  | Environmental and Institutional Sustainability                                                     |
| Global Knowledge, Memory and Communication     | 2  | Library and Information Science, Professional Practice                                             |
| Publications                                   | 2  | Open-access Multidisciplinary Scholarly Publishing                                                 |
| Administrative Sciences                        | 2  | Higher Education and Public Administration                                                         |
| Education Sciences                             | 2  | Higher Education and Educational Research                                                          |
| Other Single-contribution Journals (26 titles) | 23 | Distributed Across LIS, Information Systems, Management, and Health Sciences Librarianship Outlets |

**Note:** N=Number of sources published in each journal or journal grouping.



**Figure 3:** Leading Source Journals Represented in the Reviewed Corpus.

The bibliometric and methodological literature provides both substantive support and methodological structure for this review. The descriptive bibliometric

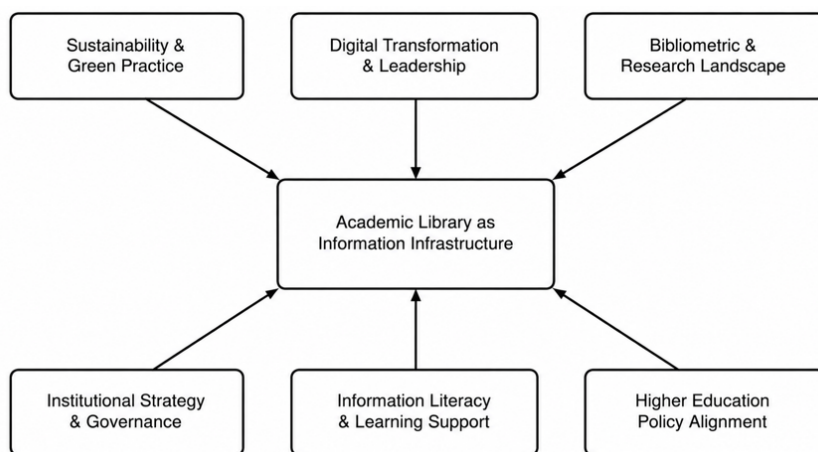
approach adopted in this study is informed by established guidance on bibliometric analysis (Donthu et al., 2021), as well as applications of scientometric

and CiteSpace-based methods to digital academic leadership (Olabiya et al., 2025) and Romanian educational research (Cretu and Grosseck, 2025). Mayr and Scharnhorst (2015) situate scientometrics and information retrieval within broader LIS traditions, highlighting the conceptual connection between LIS scholarship and the information retrieval and infrastructure functions of academic libraries.

The literature on institutional and strategic management generally views information technology and information infrastructure as sources of institutional capability rather than peripheral support functions. Research on IT value creation in the public sector suggests that such capabilities can reduce trade-offs between efficiency and responsiveness (Goh and Arenas, 2020). Similarly, research on creativity and innovation in Central and Eastern European universities links institutional innovation capacity with deliberate strategic investment (Marczewska et al., 2024). Comparative research in Bolivian and Paraguayan HEIs further identifies administrative and infrastructural conditions necessary for developing research management capacity (Pacheco et al., 2025), while current university management research

reinforces the importance of integrating digital and information technologies into institutional management (Souli and Pierrakeas, 2025).

These findings suggest that sustainable building operations, research management, and digital governance cannot be developed through isolated efforts. They depend on sustained institutional investment in infrastructure, with academic libraries representing one of the most visible examples. This helps explain the emphasis on library buildings in sustainability research, as they provide a tangible representation of institutional environmental commitments and are therefore relevant to both scholarship and public accountability. Digital leadership is another recurring theme. Research on the transition from traditional to digital leadership shows that digitalization transforms leadership practices and innovative work behaviour across organisations (Erhan et al., 2022). This is further supported by bibliometric research on digital academic leadership in higher education institutions (Olabiya et al., 2025). For academic libraries, digital leadership is closely connected with digital transformation and the policy and regulatory conditions that shape its implementation.



**Figure 4:** Conceptual Framework Linking Institutional Strategy Dimensions to the Academic Library as Information Infrastructure.

The reviewed literature indicates that digital transformation in academic libraries extends beyond technological adoption. It depends on leadership capacity, legal and regulatory frameworks, financial resources, and institutional support. Comparative research on academic and public libraries also highlights differences in digital transformation pathways (Souli and Pierrakeas, 2025). These findings suggest that transformation should be understood within its

wider governance and regulatory context rather than solely through a technology-adoption perspective. In highly controlled or centralised higher education systems, library-level digital strategies cannot be separated from system-level higher education policy. National regulatory frameworks, budget allocation, and institutional leadership can constrain or enable library-led transformation. This supports the policy-alignment dimension of the conceptual framework

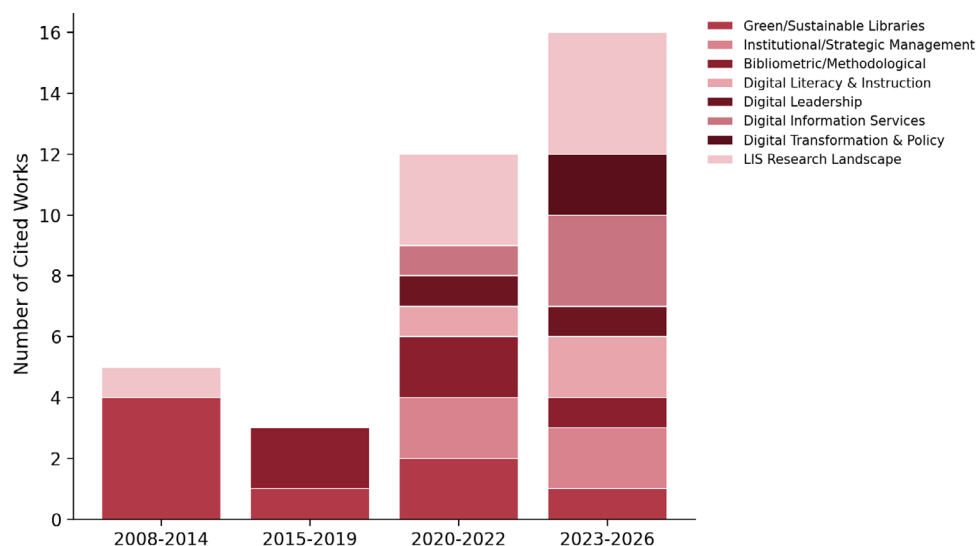
presented in Figure 4 and highlights the value of comparative research across different higher education regulatory systems to assess the generalisability of digital transformation findings across national contexts.

The digital information services theme most directly addresses the technological and operational dimensions of contemporary academic libraries. It includes an AHP-based framework for evaluating discipline-specific information services in the context of digital intelligence (Zhang et al., 2025), a conceptual account of the academic library's transition from passive information provision to proactive knowledge facilitation in the era of generative artificial intelligence (Kim, 2025), an overview of emerging technologies and trends in library practice (Nepali and Tamang, 2022), and an analysis of digital marketing research relevant to library outreach and engagement (Wani, 2023). Together with research on digital literacy and instruction, including academic libraries as partners in data literacy education (Fühles-Ubach et al., 2026), digital literacy among African LIS professionals (Subaveerapandiyana et al., 2022), and distance learning contexts in Namibia (Mufeti, 2020), these studies demonstrate that academic libraries are active pedagogical and service-oriented institutions rather than passive custodial actors.

Two further findings emerge from this literature. First, as research on generative artificial intelligence shifts from reactive responses towards proactive knowledge facilitation, library professionals required expanded competencies in data curation, algorithmic literacy, and instructional design alongside traditional

reference and cataloguing skills. Consequently, library technology strategies were accompanied by sustained investment in workforce development and training. Second, the AHP-based evaluation framework for discipline-specific information services demonstrates the growing relevance of multi-criteria decision-making in library planning. It reflects the institutional need for measurable and defensible approaches to resource allocation, particularly under increasing accountability pressures.

The thematic clusters are integrated into the conceptual framework presented in Figure 4, with the academic library positioned as information infrastructure at its centre. Six interconnected dimensions surround it: sustainability and green practice; digital transformation and leadership; bibliometric and disciplinary self-assessment; institutional strategy and governance; information literacy and learning support; and higher education policy alignment. These dimensions are mutually reinforcing rather than independent. Sustainability priorities influence digital service delivery through physical and operational infrastructure, while bibliometric self-assessment informs institutional strategy by identifying the library's research contributions. Similarly, information literacy and learning support enable libraries to contribute directly to the pedagogical mission of higher education. This integrated perspective supports calls for a holistic approach to sustainability, digital capability, and institutional strategy in academic libraries (Jankowska and Marcum, 2010; Ogbolu et al., 2026).



**Figure 5:** Evolution of Thematic Emphasis across Four Publication Periods, 2008–2026.

Figure 5 illustrates thematic development across four periods: 2008–2014, 2015–2019, 2020–2022, and 2023–2026. Green and sustainable library research emerged as a foundational concern, followed by increasing diversification through bibliometric and methodological scholarship and institutional and strategic management. The 2023–2026 period is the most thematically diverse, encompassing digital leadership, digital transformation and policy, digital information services, and continued LIS self-assessment, alongside renewed sustainability research within higher education institutional maturity frameworks. Overall, the literature shows a shift from an early focus on “green” responsibility towards a broader strategic role encompassing disciplinary governance, pedagogy, leadership, digital competence,

and institutional alignment.

Table 3 summarizes these findings by identifying key dimensions of institutional strategy relevant to academic libraries, their supporting literature, and their implications for higher education policy. The synthesis highlights the academic library as a multidimensional strategic asset encompassing sustainability, digital capabilities, and pedagogical functions that support institutional competitiveness, accountability, and mission fulfilment. This perspective extends evaluation beyond space utilisation and circulation statistics and has practical implications for resource allocation, library leadership, and the integration of library planning into broader institutional strategy rather than treating the library as an isolated cost centre.

**Table 3:** Synthesis of Institutional Strategy Dimensions Relevant to Academic Libraries.

| Strategy Dimension                            | Description                                                                                                                           | Policy Implication                                                                              |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Sustainability and Green Practice             | Environmentally responsible library design, operations, and reporting aligned with institutional and SDG-related sustainability goals | Integrate library facilities into institution-wide sustainability maturity models and reporting |
| Digital Transformation and Leadership         | Adoption of digital services, generative AI, and leadership practices that enable technological change                                | Invest in library leadership development and regulatory clarity for digital initiatives         |
| Bibliometric and Disciplinary Self-Assessment | Use of citation and content-analytic methods to evaluate research contribution and disciplinary trajectory                            | Adopt periodic bibliometric self-audit as an institutional planning tool                        |
| Institutional Strategy and Governance         | IT-enabled capability, innovation capacity, and research management embedded in library operations                                    | Embed library strategic planning within central institutional strategic planning                |
| Information Literacy and Learning Support     | Instructional and data-literacy programming supporting student and researcher competency                                              | Recognize library instruction as a contributor to retention and research-quality outcomes       |
| Higher Education Policy Alignment             | Legal, regulatory, and system-level frameworks shaping library autonomy and transformation capacity                                   | Align system-level higher education policy with institutional library transformation goals      |

**Note:** SDG = Sustainable Development Goal; IT = Information Technology

The following three recommendations are intended for institutional decision-makers. First, library capital and budget plans for buildings and technology should be evaluated multidimensionally, considering sustainability performance, digital service capability, and pedagogical contribution. The reviewed literature shows that these dimensions are interconnected rather than competing priorities. Second, digital leadership should be an explicit focus of library leadership recruitment and professional development alongside traditional competencies such as collection development and reference services. Evidence on digital leadership indicates that technology outcomes depend not only on technological availability but also on leadership capacity. Third, institutions can draw on the bibliometric tradition of self-assessment identified in this review to strengthen strategic planning. Beyond assessing national LIS scholarship, this approach can support periodic institutional evaluation of

library research contributions, service utilisation, and alignment with institutional priorities.

## Limitations and Scope for Future Research

This study has several limitations. First, the corpus was based on a fixed set of documents rather than a systematic bibliographic database search. Therefore, the descriptive bibliometric findings reflect only the reviewed corpus and should not be interpreted as population-level estimates of the LIS literature. Second, thematic coding was conducted by a single reviewer without independent coding or formal inter-rater reliability assessment, which may introduce classification bias where studies address multiple themes. Third, narrative synthesis does not allow quantitative effect-size pooling or formal study-quality assessment, and the conceptual

framework in Figure 4 represents an interpretive synthesis rather than an empirically validated model. Fourth, although the corpus covers different national contexts, its geographical distribution is uneven, limiting the generalisability of findings across higher education systems with different funding, regulatory, and governance structures. Fifth, the sources vary in methodological rigour, ranging from systematic reviews and empirical bibliometric studies to conceptual and descriptive publications, which may affect the relative evidentiary weight of the findings.

Future research should therefore conduct a formal, reproducible systematic review across multiple bibliographic databases using PRISMA guidelines, supported by multi-rater thematic coding and reliability assessment. The proposed framework should also be empirically validated by examining whether institutions that integrate sustainability, digital transformation, bibliometric assessment, and pedagogical functions within library strategy achieve stronger institutional outcomes. Structural Equation Modelling or similar multivariate approaches could test the proposed dimensions and their relationships. Future studies should also examine the rapidly developing role of generative AI and determine whether it should constitute a distinct strategic dimension or remain within digital transformation and digital information services. Overall, the six dimensions identified in Figure 4 should be treated as theoretically derived propositions requiring further empirical investigation rather than established structural dimensions.

## Conclusion

This study synthesised 36 sources from library and information science, higher education administration, and management research to examine academic libraries as information infrastructure within institutional strategy and higher education policy. Eight thematic clusters were identified, with green and sustainable libraries and LIS disciplinary self-assessment comprising almost half of the corpus. Scholarly attention increased substantially after 2020, expanding from sustainability towards digital transformation, digital leadership, institutional strategy, and pedagogical services. The proposed framework positions the academic library at the centre of six strategic dimensions: sustainability, digital transformation and leadership, bibliometric self-assessment, institutional governance, information

literacy, and higher education policy alignment. The findings suggest that academic libraries should be recognised as multifaceted strategic infrastructure rather than evaluated solely as administrative service units. Their contribution should also be assessed through sustainability, governance, digital transformation, and institutional development. Although the narrative-synthesis approach has methodological limitations, the study provides a foundation for future empirical and comparative research. Institutions that rely mainly on circulation statistics and gate counts may overlook libraries' wider contributions to research, learning, sustainability, digital transformation, and governance. A holistic approach can better align library investment with institutional priorities and strengthen the strategic role of academic libraries amid growing technological, accountability, and sustainability demands.

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