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| RESEARCH ARTICLE

A Systematic Self-Review of Electronic Searching Studies (2002–2021): Training, Infrastructure, and Institutional Contexts

Reima Al-Jarf

Full Professor of English and Translation Studies, Riyadh, Saudi Arabia

Corresponding Author: Reima Al-Jarf, **E-mail**: reima.al.jarf@gmail.com

| ABSTRACT

This study conducted a systematic review (SR) of the author's research program on electronic searching published between 2002 and 2021. A total of seventeen studies were identified and organized into five thematic clusters: electronic information infrastructure, factors affecting electronic searching, electronic searching skills and training, integration of electronic resources in teaching and research, and policies, intellectual property, and e transformation. Together, these studies provide a comprehensive account of the conditions, competencies, and institutional arrangements that shape effective electronic searching in higher education contexts. Findings across the corpus indicate that successful electronic searching involves a combination of individual skill development, supportive institutional environments, and efficient technological infrastructure. Gaps in connectivity, system design, metadata quality, and resource availability directly influence users' ability to locate and retrieve information. Fragmented databases, limited access to full text materials, and inconsistent archiving practices, were found to hinder researchers' performance. Results also demonstrate that electronic searching skills do not emerge spontaneously but require explicit instruction, guided practice, and exposure to diverse digital tools that appear to consistently improve users' confidence, accuracy, and efficiency. Training programs that emphasized search strategies, evaluation of digital sources, and searching specialized databases yielded noticeable gains among faculty, graduate students, and library staff. Additionally, integrating electronic resources into teaching and research both enhances and depends on improved searching practices. When electronic resources are embedded within coursework and research tasks, learners demonstrate stronger engagement and more sophisticated information handling behaviors. However, such integration is only effective when supported by institutional policies, training initiatives, and technological systems that facilitate access and encourage sustained use. Moreover, the SR highlights the role of policy frameworks, intellectual property regulations, and institutional leadership in shaping the broader digital environment. Alignment between pedagogy, infrastructure, and policy was shown to be critical for enabling effective electronic searching across academic settings. Finally, this study recommends that researchers use AI supported search tools. However, they should be aware of their limitations. AI systems may generate incomplete or biased search results, overlook domain specific sources, or misinterpret queries that require disciplinary nuance. They should critically evaluate AI generated outputs, verify retrieved sources through authoritative databases as Google Scholar.

| KEYWORDS

Systematic review (SR), Al-Jarf research program, electronic searching, electronic searching literacy, electronic searching skills, electronic searching infrastructure, intellectual property of digital resources, access to digital resources, electronic databases, specialized database search

| ARTICLE INFORMATION

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1. Introduction

Library search has evolved from ancient clay tablet inventories (c. 2600 BC) to sophisticated, unified digital discovery tools. in the 18th and 19th centuries, early catalogs were handwritten lists, but later they developed into card catalogs. The late 20th century

marked the transition to Online Public Access Catalogs (OPACs), followed by modern "Library Search" platforms, that rely on central indexes to integrate physical collections, electronic journals, and databases.[1]–Some major catalogs and resources include (i) WorldCat, the largest international library catalog, with over 3 billion items; (ii) HathiTrust Digital Library, a large, searchable repository of scanned books and journals; and (iii) Early English Books Online, which contains over 125,000 digitized early printed works (1475–1700). Contemporary library search systems, which began maturing around 2016-2018, aim to offer a single, user-friendly interface for all types of library resources[2]. In addition to traditional library catalogs, a variety of databases exist.[3] These include (i) Scholarly Databases: Peer-reviewed journals and academic papers (e.g., Google Scholar, Emerald, Taylor & Francis); (ii) Subject-Specific Databases: Focused on specific fields (e.g., MEDLINE for medicine, VOCEDplus for education); (iii) Reference Databases: Encyclopaedias, dictionaries, and handbooks; (iv) Data & Statistical Databases as the Saudi Open Data Portal or GCC Statistical Center; (v) Repository Databases: Digital Repository at Naif University. Moreover, researchers increasingly rely on large-scale scholarly platforms that aggregate or host academic content. These include SpringerLink, which provides access to thousands of peer-reviewed journals and books across disciplines; ResearchGate, Academia.edu, and SSRN which function as academic social networks where scholars share publications and preprints; Semantic Scholar, an AI-enhanced discovery engine that indexes millions of research papers; and SciTech, which offers access to scientific and technical literature. These platforms complement library systems by expanding access to scholarly communication, enabling researchers to discover, retrieve, and share knowledge beyond institutional boundaries.

Due to the importance of library systems and electronic resources, a plethora of single studies has examined issues like information organization and retrieval, user behavior and interaction, information technology and systems, library management and services, information policy and ethics, bibliometrics and scientometrics. However, only a limited number of systematic reviews (SRs) exist within the Library and Information Science (LIS) research. The literature review revealed 6 types of studies that reviewed the following: (i) library services as transformation of libraries during Covid-19 pandemic (Ashiq et al., 2022); library services provision in response to covid-19 pandemic (Ayeni et al., 2021); effects of librarian-provided services in healthcare settings (Perrier et al., 2014); (ii) user behavior and information practices as students who are non-users of their academic library (Brunskill & Hanneke, 2021); individual differences in information seeking behavior and retrieval research (O'Brien et al., 2017); and information behaviour and information practices of academic librarians (Nel, 2020); (iii) instruction, training, and research support that include: evaluating information skills training in health libraries (Brettle, 2007), research consultations in the academic library (Stapleton et al., 2020), and research support in health sciences libraries (Visintini et al., 2018); (iv) digital libraries, search systems, and access to information. These include topic search filters (Damarell et al., 2019); factors contributing to the development and use of mobile digital libraries (Khomo et al., 2023); review of the status of 20 digital libraries (Meyyappan et al., 2000); evaluating digital libraries (Rahimi et al., 2018); and use of mobile phones to access library services and resources (Safdar et al., 2025); (v) information literacy and digital skills such as: effectiveness of academic library research guides (DeFrain et al., 2025); digital literacy, digital competence, digital fluency and digital dexterity in academic libraries (Makhafola et al., 2025); and digital pedagogies for librarians in higher education (Saib et al., 2023); and (vi) Historical / conceptual reviews. Which include the history of academic libraries in the United States (Weiner, 2005), and the evaluation of library services (Lancaster, 1995).

The above literature review shows lack of studies that review electronic searching needs, skills and literacy among graduate students, faculty and library staff. They also do not review training programs on electronic searching, and studies on types of electronic resources that can be integrated in teaching and learning. No SR has analyzed a coherent research program on electronic searching conducted by a single author. Therefore, this study aims to fill this gap by conducting an SR on the author's studies on electronic searching published between 2002-2021. It aims to categorize the author's research program comprising 17 studies into thematic clusters, describe the study characteristics and report the collective results of the studies in each thematic cluster.

This study is significant because it represents the first SR to analyze the complete research program of a single author in the field of electronic searching. Unlike traditional SRs, which synthesize scattered studies conducted by multiple researchers, this SR examines a coherent body of work produced over 2 decades. This longitudinal perspective makes it possible to trace the evolution of themes, methods, and findings across time, offering insights that cannot be captured through conventional cross-sectional reviews. The study also fills a clear gap in the LIS literature. Existing SRs focus on areas such as library services, user behavior, digital libraries, information literacy, and instructional support. However, none of them address electronic searching as a research domain, nor do they examine electronic searching needs, behaviors, or challenges among graduate students, faculty, or library staff. Similarly, no review has synthesized evidence on electronic searching training programs or how electronic resources can be integrated into teaching and learning. By addressing these overlooked areas, this study provides the

[1] https://en.wikipedia.org/wiki/Library_catalog

[2] https://backend.production.deepblue-documents.lib.umich.edu

[3] https://ncss.gov.sa/en/node/58#:~:text=The%20National%20Center%20for%20Social,Economic%20and%20social%20research%20data.

first structured synthesis of research on electronic searching within the Arab academic context. It contributes a thematic clustering framework that organizes the author's studies into five coherent clusters. This framework clarifies the conceptual structure of the research program, as well as offers a replicable model for analyzing other scholars' research trajectories and provides evidence-based insights that can inform electronic searching instruction, digital literacy initiatives, and the design of training programs in higher education. Finally, the study documents and evaluates a sustained research contribution to the field. By systematically analyzing a single author's body of work, the study creates a scholarly record of conceptual, methodological, and pedagogical contributions to electronic searching. This type of meta-analysis is rare in LIS research and adds historical and intellectual value to the field by highlighting how individual research programs shape disciplinary development over time.

Finallt, this SR is significant because it is part of a broader series of SR/MA projects by the author, that has so far cover the following: *teaching English for art education purposes to Ph.D. students (Al-Jarf, 2026a); EFL reading instruction: themes, methods, and pedagogical insights (Al-Jarf, 2026b); diverse educational evaluation domains (Al-Jarf, 2026c); students' errors in English–Arabic and Arabic–English translation (Al-Jarf, 2026d); mobile apps for developing multiple language skills in EFL (Al-Jarf, 2026e); adult reading practices, interests, habits and challenges (Al-Jarf, 2026f); pronunciation instruction and practice in L2 (2005–2025) (Al-Jarf, 2026g); teaching reading in Arabic to grades 1–12: textbooks, skills, and learning outcomes (Al-Jarf, 2026h); specific-skill assessment (Al-Jarf, 2026i); Arabic–English transliteration of personal names and public signages (Al-Jarf, 2026j); children's language acquisition and development in Saudi Arabia (Al-Jarf, 2026k); classroom practices, writing enhancement and creativity among EFL struggling students (Al-Jarf, 2026l); collaborative learning and teaching in digital environments (Al-Jarf, 2026m); effectiveness of mind-mapping on multiple English language skills in the Saudi context (Al-Jarf, 2026n); inadequate staffing and large class sizes in Saudi EFL and translation programs (Al-Jarf, 2026o); innovative word formation and pluralization processes in Arabic (Al-Jarf, 2026p); 2024–2025 studies on AI Arabic translation, linguistics and pedagogy (Al-Jarf, 2026q); three decades of ESP innovation (Al-Jarf, 2026r);*

2. Methodology

2.1 Study Corpus

The corpus consists of 17 studies by the author published between 2002 and 2021.

Cluster 1: Electronic Information Infrastructure

This cluster includes studies on databases, union catalogs, access, archiving, information systems, and infrastructure. It includes the following:

1) *A comparison of the Egyptian library consortium and ohiolink (Al-Jarf, 2017a)*
2) *Arabic union catalogs (Al-Jarf, 2007a)*
3) *Arabic electronic databases in education: current status and future perspectives (Al-Jarf, 2013a)*
4) *Electronic collaboration among Arab universities (Al-Jarf, 2009a)*
5) *Availability and use of electronic resources at Arab universities (Al-Jarf, 2004b)*

Cluster 2: Factors Affecting Electronic Searching

This cluster includes studies that examine structural, technical, and environmental factors that influence researchers' ability to search for, access, and retrieve electronic information. It includes:

1) *Issues in KSU faculty publication archiving and access (Al-Jarf, 2008a)*
2) *Arabic research management in the flow of information age (Al-Jarf, 2006)*

Cluster 3: Electronic Searching Skills & Training

This cluster includes studies on training, digital skills, search strategies, faculty development, and electronic literacy such as:

1) *Connecting graduate students across the world with research web-conferences (Al-Jarf, 2018)*
2) *Using a small network to teach internet searching skills to ESP graduate students (Al-Jarf, 2005a)*
3) *A model for an electronic searching course at Saudi universities (Al-Jarf, 2004a)*
4) *Training ESP college students in electronic searching (Al-Jarf, 2003b)*
5) *Electronic searching skills of faculty, graduate students and library staff (Al-Jarf, 2003a)*

Cluster 4: Integration of Electronic Resources in Teaching & Research

This cluster includes studies on curriculum integration, instructional design, research skills, and digital pedagogy such as:

1) *A model for integrating electronic resources in university courses (Al-Jarf, 2017b)*
2) *Teaching and assessing graduate students' research skills in English for art education purposes (Al-Jarf, 2013f)*
3) *Testing Research Skills in EFL (Al-Jarf, 2007c)*

Cluster 5: Policies, Intellectual Property

This cluster covers studies on policy, leadership, IP rights, administrative challenges, digital transformation as:

1) *Intellectual property in the online and distance learning environments at Saudi universities (Al-Jarf, 2021).*
2) *Intellectual property and elearning at Saudi universities: problems and solutions (Al-Jarf, 2013c)*

2.2 *Eligibility (Inclusion & Exclusion) Criteria*

Studies were excluded if they met any of the following criteria:

- ***Duplicate studies and if they represent an earlier version of the same training model, with overlapping methodology and outcomes***, workshop-based studies disseminated in more than one format, such as conference presentations and later as full book chapters. *Skills of Integrating electronic information sources on the internet in the teaching-learning process at the university level (Al-Jarf, 2017c); Synchronous online training workshops (Al-Jarf, 2013d); Teaching and assessing graduate students' research skills in English (Al-Jarf, 2013e); Developing students' searching skills (Al-Jarf, 2013); Integrating internet resources in the teaching learning process (Al-Jarf, 2012); Using a small network to teach it skills to ESP graduate students (Al-Jarf, 2005b); Electronic Databases at Arab Universities: Their Availability & Use (Al-Jarf, 2004c); Availability of electronic resources at Arab Universities (Al-Jarf, 2004); University education and electronic searching (Al-Jarf, 2003c); Training ESP college students in electronic searching (Al-Jarf, 2002c); Developing students' searching skills (Al-Jarf, 2013b); A training program for developing college female faculty computer skills and utilization in language teaching, translation and research based on their instructional and occupational needs (Al-Jarf, 2002b).*

- ***Articles that partially focus on electronic skills such as studies focusing on thesis writing, peer-review processes, academic publishing, or the use of artificial intelligence*** *as an SR and MA of 2024–2025 studies on AI Arabic translation, linguistics and pedagogy (Al-Jarf, 2026); To publish or not to publish AI-generated research articles in scholarly journals: A perspective from editors and publishers (Al-Jarf, 2025c); AI translation of full-text arabic research articles: The case of educational polysemes (Al-Jarf, 2025a); Students' assignments and research papers generated by AI: Arab instructors' views (Al-Jarf, 2024); Specific linguistic questions that Artificial Intelligence (AI) cannot answer accurately: Implications for digital didactics (Al-Jarf, 2025b); Challenges Faced by Arab peer-reviewers (Al-Jarf, 2023a); Challenges faced by peer-reviewers for local and international academic institutions (Al-Jarf, 2019); MA and Ph.D. thesis evaluation at Saudi universities: Problems and solutions (Al-Jarf, 2022c); Using online instruction in English for art education (Al-Jarf, 2009b); MA and Ph.D. Thesis evaluation problems and proposed solutions (Al-Jarf, 2008b); Thesis evaluation challenges in Saudi Arabia as perceived by graduate students, advisors and examiners (Al-Jarf, 2008c); Use of CALL in no-tech EFL classrooms (Al-Jarf, 2005c); University instructors and technology (Al-Jarf, 1999); Characteristics of Ph.D. dissertations of Saudi students who graduated from American universities between 1969-1985 (Al-Jarf, 1991).*

- ***Studies that focus on elearning*** *such as Eintegration challenges for rectors and deans in higher education institutions in Saudi Arabia (Al-Jarf, 2007b).*

- ***Non-empirical works such as training guides as*** *a researcher's guide to electronic database searching (Al-Jarf, 2002a); and How to use the library information sources* Al-Jarf, 1989).

2.3 *Corpus Characteristics*

The final corpus consisted of 17 studies authored by Reima Al-Jarf between 2002 and 2021. Because the dataset represents a closed, author-bounded research program, it is both comprehensive and internally coherent, reflecting the author's sustained scholarly trajectory in the electronic information infrastructure, electronic searching skills & training, integration of electronic resources in teaching and research, and policies, intellectual property and e-transformation. Although the studies address diverse topics, they share a consistent analytical orientation and employ comparable data-collection approaches. Across the corpus, data were primarily descriptive and derived from three sources: questionnaire surveys and interviews with students, faculty, and library. Together, these methods generated a coherent body of evidence on electronic searching practices and outcomes across Saudi Arabia and international contexts. For synthesis purposes, the 17 studies were grouped into 5 thematic clusters, each

representing a distinct dimension of the research program. Collectively, these clusters offer an integrated overview of the author's contributions to electronic searching research. Overall, the corpus reflects a longitudinal, methodologically consistent body of work that traces the evolution of electronic searching practices over time.

2.4 *Contextual Background (Non-Research Professional Workshops)*

In addition to the empirical studies included in this SR, the author delivered numerous professional workshops on electronic searching training sessions for faculty members and students across several institutions in Saudi Arabia and abroad between 2002 and 2012. Workshops at Princess Noura University, King Saud University, TESOL Ukraine, KAMALL conferences, and other academic venues were practical training sessions rather than research studies. They focused on hands-on skills such as navigating databases, selecting search terms, interpreting records, and exporting abstracts. Because these workshops did not involve research designs, data collection, or analytic procedures, they were not eligible for inclusion in the systematic corpus and are therefore not listed among the excluded studies. Instead, they provide contextual background reflecting the author's broader professional engagement in developing electronic-searching competencies. No pre- or post-training assessment instruments were used.

2.5 *Nature of the Instructional Interventions*

The instructional interventions conducted within the included studies were intentionally practical and procedural rather than terminology-driven. For example, the author's published training manual, *A Researcher's Guide to Electronic Database Searching* (Al-Jarf, 2002a), presents actual screenshots of ten databases and guides researchers step-by-step from login to printing or emailing records without relying on specialized LIS terminology. Similarly, the workshops embedded within the studies focused on concrete tasks such as selecting search terms, navigating LLBA and ERIC, interpreting records, identifying relevant items, and saving or exporting abstracts. Students often found these operational steps challenging in themselves; therefore, introducing advanced LIS terminology (typically taught to LIS majors) would have added unnecessary cognitive load.

2.6 *Information Sources*

Because this SR examines a closed, author-bounded corpus, the information sources were limited to the complete body of research published by Reima Al-Jarf between 2002 and 2021. All studies were retrieved from two platforms that index the author's complete scholarly output. No external database search was required, as the aim was not to identify all global studies on electronic searching, but rather to synthesize all studies related to electronic searching within a single, self-contained research program. All records were retrieved from publicly accessible academic platforms in which the author's publications are archived. These sources include Google Scholar, ResearchGate, Semantic Scholar, Academia.edu, SSRN, ERIC, EBSCO, ProQuest, and institutional repositories. Collectively, these platforms provide full coverage of the author's publications across journals, conference proceedings, reports and digital repositories. All included and excluded studies were verified manually to ensure accuracy, remove duplicates, and confirm alignment with the eligibility criteria described in Section 2.2.

2.7 *Data Extraction and Synthesis*

Data extraction was conducted manually using a structured template developed specifically for this author-bounded corpus. For each study, key information was recorded, including publication year, research purpose, methodological approach, participant characteristics, data collection tools, analytical procedures, and major findings. Additional fields captured each study's alignment with one of the five thematic clusters: electronic information infrastructure; factors affecting electronic searching, electronic searching skills and training, integration of electronic resources in teaching and research; and policies, and intellectual property. Extracted data were cross-checked for accuracy and consistency across the corpus.

Given the descriptive nature of the studies and the heterogeneity of their designs, a qualitative synthesis approach was employed. Studies were compared within and across the clusters to identify convergent themes, developmental patterns, and conceptual linkages. The synthesis emphasized longitudinal progression, methodological coherence, and the evolution of electronic searching practices over time. Rather than aggregating numerical outcomes, the analysis focused on tracing how the author's research program collectively contributed to understanding electronic searching behaviors, training needs, infrastructural challenges, and policy implications in Saudi and Arab higher education contexts. This integrative synthesis provided a comprehensive account of the trajectory and impact of the research program.

2.8 *PRISMA Flow Description*

Because this ISR is based on a closed, author-bounded corpus of 17 studies published by Reima Al-Jarf between 2002 and 2021, the PRISMA flow reflects a streamlined and fully contained identification and screening process. All publications produced by the author during this period were retrieved from academic platforms and institutional repositories and were manually screened for relevance to electronic information infrastructure, electronic searching skills and training, integration of electronic resources in teaching and research, and policies, intellectual property, and e-transformation. During the screening stage, each record was

assessed against the predefined eligibility criteria. Studies were excluded if they were duplicates, non-empirical, or if they addressed topics outside the scope of electronic searching—such as thesis evaluation, peer-review processes, academic publishing, artificial intelligence applications, textbook evaluation, or general instructional technology. Full-text screening confirmed the final set of 17 studies that directly contributed to the five domains of the research program. The PRISMA flow therefore documents a linear progression from the initial identification of all publications within the author's research record, through relevance screening and eligibility assessment, to the final inclusion of studies that substantively address electronic searching practices, infrastructure, training, integration, and policy contexts. This process ensured that the resulting corpus was comprehensive, coherent, and methodologically aligned with the aims of the review.

3. Results

3.1 Overview

This study synthesizes findings from 17 studies that examine multiple aspects of electronic searching. The analysis is organized around five thematic clusters, allowing the results to highlight both the distinct contributions of individual studies and the cross-cluster patterns that characterize the author's broader research program. Across the corpus, the studies consistently investigate key dimensions of electronic searching, including electronic information infrastructure, electronic searching skills and training, the integration of electronic resources in teaching and research, and policies, intellectual property, and e-transformation. This overview presents the major trends emerging from the corpus and illustrates how each thematic cluster contributes to a deeper understanding of electronic searching. Collectively, the studies document the nature of electronic searching practices, the skills required to navigate digital environments, the institutional and policy contexts that shape access and use, and the systemic issues influencing electronic searching across Saudi Arabia and the Arab region. Together, these findings provide a coherent picture of how electronic searching has evolved over time within the author's research trajectory.

3.2 Study Characteristics

The corpus consisted of 17 unique studies distributed over 5 thematic clusters. Findings of each cluster are presented below.

Cluster 1: Electronic Information Infrastructure

A comparison of the Egyptian library consortium and OhioLink (Al-Jarf, 2017a)

The study compared the Union Catalog of the Egyptian University Library Consortium with that of OhioLINK. The results revealed substantial differences between the two systems. OhioLINK demonstrated a high level of technical sophistication and consistency, offering both simple and advanced search interfaces supported by powerful Boolean, truncation, and proximity searching. It also provided extensive filtering options by document type, language, time period, and location, along with rich bibliographic metadata that included abstracts, subject headings, cover images, edition details, and availability information. Search results were accurate, relevant, and efficiently retrieved, with a clear interface and functional help features that supported users throughout the search process. In contrast, although the Egyptian Union Catalog allowed searching by author, title, and subject and offered multiple sorting options, several technical issues were identified. These included malfunctioning menus, inconsistent sorting, incomplete display of search results, and limited precision when searching by keywords or author names. Metadata fields were less detailed than those in OhioLINK, lacking abstracts, cover images, and comprehensive item descriptions. The range of indexed materials was also narrower, excluding electronic books, audiovisual materials, and theses. Some interface elements were duplicated or non-functional, and the search engine struggled with complex queries or combined keywords. Overall, OhioLINK is significantly more advanced, comprehensive, and user-friendly. The Egyptian Union Catalog provides a valuable foundation but requires improvements in search engine performance, metadata completeness, interface design, and coverage of document types.

Arabic Union Catalogs (Al-Jarf, 2007a)

The study compares the Egyptian Universities Network Union Catalog with the OhioLINK library network. The findings revealed a clear advantage for OhioLINK in terms of network size and diversity of holdings, as it includes millions of records across dozens of academic institutions, whereas the Egyptian catalog covers a smaller number of libraries and records. OhioLINK also offers an advanced, user-friendly search interface that supports simple and advanced searching, Boolean operators, proximity and truncation searches, and precise filtering by material type, language, date, and location, with rich bibliographic metadata that includes abstracts, subject headings, cover images, and availability information. In contrast, the Egyptian catalog provides basic search functions but suffers from limited filtering options, weak handling of compound keywords, the absence of abstracts and cover images, and duplication in display screens, in addition to a narrower range of indexed materials that focuses mainly on printed books. The study also identified technical issues affecting the accuracy and relevance of search results, compared with the high precision and smooth retrieval offered by OhioLINK. Overall, the study concludes that the Egyptian catalog represents an important step in the Arab information environment, but it requires substantial development in its search engine, expansion

of material types, enhancement of metadata quality, standardization of cataloging practices, and adoption of OhioLINK's strengths to improve the efficiency of the unified Arab catalog.

Across the two studies conducted by Al-Jarf (2007, 2017), a clear developmental trajectory can be observed in the evaluation of the Egyptian Union Catalog. While the 2007 study highlighted foundational limitations in metadata quality, search precision, and interface functionality, the 2017 study revealed both continuity in these weaknesses and the emergence of new technical challenges as the system expanded. Together, the two studies provide a longitudinal perspective on the catalog's evolution and underscore the persistent gap between the Egyptian system and OhioLINK across a decade of development.

Arabic electronic databases in education: Current status and future perspectives (Al-Jarf, 2013a)

The study reports the availability of Arabic specialized electronic databases that index research articles, books, journals, and dissertations in education and psychology. Results showed two types of Arabic databases: (1) Networks that host educational resources among other disciplines such as the Arabic Online Union Catalog and AskZad; and (2) databases specialized in education only such as Shamaa and EduSearch databases. Most databases use simple and advanced searches, several broadening narrowing options, and give detailed bibliographic information. Many individual dissertation databases are available at universities. Most databases have limited coverage, and some have outdated content. Searching for documents by author, title, and subject yields irrelevant results. Recommendations for improvement are given.

Availability and use of electronic resources at Arab universities (Al-Jarf, 2004b)

The homepages of 202 Arab universities were searched and a sample of faculty was interviewed. It was found that 80.7% of Arab university libraries are still traditional and lack electronic databases, including some open universities, virtual universities and universities of science and technology. All university libraries in the Gulf States, except Shari'aa universities, contain electronic databases. Most available databases are in English; Arabic databases are lacking. Foreign universities, such as the University of Columbia in the Sudan and the American Universities of Cairo and Beirut, host many more databases than Arabic universities. All electronic databases at Um Al-Qura University were used 3686 times a year only. On average, a student or faculty member uses all databases once a year. Taking into consideration that the subscription fee for a single database per year can be as high as US$ 24,000, database usage at Arab universities is not cost-effective. In addition, 94% of female faculty members and 97% of female graduate students and none of the library employees at King Saud University, can search electronic databases. The study concluded by recommending that all Arab universities and research centers have a network of electronic resources, and that Arabic specialized electronic databases be created and new documents be indexed and stored on a regular basis. Researchers should be allowed to access available databases on and off-campus. Electronic publishing in Arabic should also be encouraged.

Electronic Collaboration Among Arab Universities (Al-Jarf, 2009a)

The study reported that fewer than 20% of Arab universities possess specialized electronic databases, and 15% use learning-management systems, with a limited number of available online courses. Research output across the Arab world is scattered, and existing Arab databases suffer from slow updating, narrow coverage, and incomplete indexing, even within the same institution. Therefore, this study proposes the creation of a unified Arab network connecting university libraries and research centers through a single access portal, alongside the integration of small local databases into a comprehensive regional platform. It also recommends establishing a unified digital library that includes peer-reviewed journals, conference proceedings, and graduate theses. The study also calls for coordinated Arab policies to advance information systems, encourage investment in digital technologies, and adopt a shared strategy for implementing e-learning through open-source platforms, enabling joint online courses and cross-university teaching. It concludes by advocating for a centralized website that aggregates all Arab academic conferences to facilitate scholarly communication.

Cluster 2: Factors Affecting Electronic Searching
Issues in KSU faculty publication archiving and access (Al-Jarf, 2008a)

This study examines the King Saud University Repository (KSUR) and explores how documents are collected, classified, curated and preserved, and how the digital content is accessed. Although the repository has a total of 48789 file URL's, the proportion of faculty's full-text publications contained in the repository is very small. Faculty publications are stored in folders and subfolders, which are given serial numbers, not fields and subfields. Documents in the KSUR cannot be accessed through the university library website and no link to a special website with a main page, simple and advanced searching tools and multiple keywords narrowing options is available. Faculty publications can only be accessed through Google or Google Scholar by using an author's name as a search term. The Arabic document content is unreadable and 70% of the abstract are simply deleted. When articles uploaded by the faculty in PDF format are located in Google or Google Scholar, they appear in WORD not PDF format. Use of faculty publications is not protected by copyright law.

Arabic research management in the flow of information age (Al-Jarf, 2006)

The study highlights a substantial gap between the ease of accessing foreign resources and the difficulty of obtaining Arabic resources in the era of rapid information flow. While global databases such as *Dissertation Abstracts*, *ERIC*, *LISA*, *LLBA*, and *PsycInfo* offer immediate, around-the-clock access from home, with continuously updated records, full texts, and abstracts that can be stored or shared electronically, the process of locating Arabic studies remains slow, fragmented, and tiresome. Researchers must physically visit libraries, search catalogues and shelves manually, wait for staff assistance, and often struggle to obtain copies of articles or theses, with limited access to studies conducted in other Arab countries. Graduate students frequently lack awareness of where to find relevant references, and researchers have no unified Arab platform that aggregates studies, theses or conference papers. Although various Arabic websites provide scattered lists of research materials, they lack specialization, organization, and comprehensiveness of international databases. The study concludes that the Arab research environment still lacks an integrated information infrastructure and highlights the urgent need for a modern, unified Arab knowledge system that enables fast, reliable access to Arabic research comparable to foreign ones.

Cluster 3: Electronic Searching Skills & Training
Connecting graduate students across the world with research web-conferences (Al-Jarf, 2018)

The study describes a series of training web-conferences in which graduate students majoring in linguistics in Australia, UK, USA and Saudi Arabia participated to develop their electronic searching skills in linguistics, to introduce them to the latest trends and developments in linguistic research, and to communicate with expert linguists worldwide. Several free web-conferencing software such as PalTalk, Skype, How-to Geek and WEbex were tried out. The results showed that all participating graduate students found the synchronous online workshops extremely useful. They reported significant knowledge gains, particularly in locating references online and understanding research tools and databases. The workshops also fostered a constructivist, student-centered learning environment in which participants collaboratively built knowledge about linguistic research. Due to platform limitations, SAL organizers capped attendance at 20 participants per workshop, resulting in waiting lists. Overall, the findings align with previous literature showing that synchronous web-conferencing enhances learning, interaction, and professional development in distributed educational settings.

Using a small network to teach internet searching skills to ESP graduate students (Al-Jarf, 2005a)

On the basis of a needs assessment, a computer literacy questionnaire and an English proficiency test, an ESP course was designed for graduate students majoring in art education. Since the students had no access to a computer lab or internet, a small computer network was built in the classroom. The study describes how a small computer network was installed and configured, what internet searching skills were integrated in the ESP course, what training and assessment methods were used, in addition to students' views on the training module.

Electronic searching skills of faculty, graduate students and library staff (Al-Jarf, 2003a)

Results of an exploratory study with a sample of university instructors, library staff and graduate students showed that 6% of the faculty, 4% of the graduate students, and one of the library staff at King Saud University can search and locate references on the internet. This study aimed to introduce faculty, graduate students and library staff to searching skills in electronic databases, specifically: (i) using general and specialized search engines; (ii) choosing a database suitable for the researcher's area of specialty; (iii) connecting to electronic databases; (iv) identifying the tools of electronic databases; (v) searching electronic databases using simple search, advanced search, keywords, descriptors, searching by author, subject and title; (vi) narrowing the search by selecting specific dates, a specific language, an author, document type and others; (vii) printing and retrieving search results and sending them by email; (vii) documenting the references obtained from the internet and electronic databases.–the study recommended connecting female campuses to the internet, and to the Central Library, to enable faculty, connecting graduate students, and library staff to search OPACs (Online Public Access Catalogue) and available electronic databases from campus and off campus. It also recommends connecting the Central library with other Saudi, Arab and international libraries, allocating financial resources, providing technical support, preparing a searching guide, updating the content of research methodology courses so that the keep abreast of latest developments in technology and library science.

Training ESP college students in electronic searching (Al-Jarf, 2003b)

150 female graduate students at King Saud University were interviewed. Results indicated that 13% of the students use search engines like Google and AltaVista to locate information and fewer than 1% can search the ERIC database. Although the main library at King Saud University has 28 full-text databases and 30 databases on CD-ROM, no training programs or short courses are offered by the library, Computer or Language Center. Female graduate students expressed a desire and a need to acquire electronic searching skills. Therefore, this study recommends training ESP graduate students in training electronic searching. The

training program should describe the training content, requirements, scheduling, training methods, funding, trainers, and assessment.

A model for an electronic searching course at Saudi universities (Al-Jarf, 2004a)

Results of an exploratory study with graduate and undergraduate students revealed that fewer than 4% can search electronic databases. Therefore, this study recommends that an electronic searching course be offered to graduate and undergraduate students at Saudi colleges and universities as part of the university requirements. Training in electronic searching is strongly recommended because most electronic databases are in English, most college students are not proficient in English, the variety of electronic databases and the complexity of the searching process. The proposed training course should focus on electronic searching basics, strategies, commands, and terminology, and abbreviations used in citations, abstracts and full-text articles. The content of the research methodology courses should be updated to keep up with the latest developments in library science and information technology.

Cluster 4: Integration of Electronic Resources in Teaching & Research
A model for integrating electronic resources in university courses (Al-Jarf, 2017b

The study proposes a model for integrating electronic resources into university courses, driven by the urgent need to prepare students for self-directed learning and for navigating a rapidly changing knowledge landscape. Traditional print sources are no longer sufficient, while the Internet provides vast, diverse, and constantly updated information that can be accessed easily at any time. The framework focuses on identifying the types of information students need for their courses, such as peer-reviewed research, statistics, reports, e-books, and audiovisual materials, and familiarizing them with digital libraries, databases, encyclopedias, academic search engines, and the websites of scientific organizations. It also outlines essential electronic-searching skills that students must acquire, including selecting appropriate search terms, using advanced search tools, evaluating the quality of sources, verifying the currency of information, and applying proper documentation practices. The framework also proposes practical steps for integrating these resources into classroom instruction, such as determining course information needs, selecting suitable sources, training students through hands-on tasks, linking classroom activities to online research, and discussing research outcomes during class sessions.

Teaching and assessing graduate students' research skills in English for art education purposes (Al-Jarf, 2013f);

Testing Research Skills in EFL (Al-Jarf, 2007c)

A research training module was designed to help graduate students locate, read, and comprehend art abstracts and full-text articles needed for their assignments, term papers, and theses. At the end of the training module, the students were posttested. They were given individual research projects for which they had to select search terms, define a searching strategy, go online, log into electronic databases, conduct simple and advanced searches, and print or save the records obtained. They were also asked to locate art dissertation abstracts and journal articles, skim them to identify the aim of the study, the instrument used for data collection, the subjects, and the results, and provide a summary translation in Arabic. Results of the posttest revealed a marked improvement in the students' electronic searching skills following the training module. The mean score increased from 27% on the pretest to 62.5% on the posttest. A paired-samples t-test confirmed that the gain was statistically significant, demonstrating that the training module effectively enhanced students' ability to select search terms, navigate online bookstores and specialized databases, locate abstracts and full-text articles, identify components of research abstracts and articles, and prepare reference lists. Overall, the results provide strong evidence that structured electronic-searching instruction can substantially improve graduate students' research skills in art education.

Cluster 5: Policies, Intellectual Property & e-Transformation
Intellectual property in the online and distance learning environments at Saudi universities (Al-Jarf, 2021).

Results of the survey with a sample of instructors and students showed lack of awareness of copyright laws. There is also a need for protecting the copyrights of electronic resources and for setting clear-cut copyright policies by Saudi universities. Many Arab instructors and students have misconceptions about copying and pasting information without documentation and without taking permission from the owner. Some copyright violators refuse to delete what they have plagiarized. Some instructors whose copyrights have been infringed do not know where to complain. Their employers do not care about restoring their copyright, and do not punish copyright violators.

Intellectual property and eLearning at Saudi universities (Al-Jarf, 2013c)

Interviews with a sample of students and faculty have shown that many students are unaware of intellectual property rights and laws. There is a great need for protecting the copyright of electronic materials at Saudi universities. Saudi Universities need to

have clearly stated Intellectual property laws that protect and encourage the creation and proper use of electronic materials and resources by students and faculty. Findings also revealed some misconceptions about plagiarism and improper use of electronic resources. Some believe that it is their right to use online resources. Others refuse to delete what they have illegally used, as they feel that they have not breached any laws. Some faculties were exposed to the illegal use of their online material, but they do not know where they can complain to regain their copyright. Others indicated that when they complained, their institutions did not care about protecting their copyright and punishing those who breach copyrights; in addition to the negative effects of plagiarism on faculty morale and productivity.

4. Discussion

4.1 *Meta-Conclusion*

Across the 17 studies included in this SR, a coherent and cumulative research trajectory emerges, documenting nearly two decades of work on electronic searching practices, infrastructures, skills, and policies. The corpus shows that electronic searching is influenced by both individual competencies and the institutional and technological environments in which users operate. Access to reliable electronic information infrastructure, systems, connectivity, and resource availability consistently shaped users' ability to search effectively.

The findings also demonstrate a persistent need for structured training in electronic searching. Across populations and contexts, users benefited from explicit instruction, guided practice, and exposure to diverse digital tools. Furthermore, the studies show that integrating electronic resources into teaching and research enhances users' engagement with digital information and supports more effective searching behaviors. Finally, intellectual property considerations, institutional policies, and e-transformation initiatives form an important backdrop that influences how electronic resources are accessed and used.

Taken together, the corpus provides a longitudinal empirical account of how infrastructure, skills, pedagogy, and policy collectively shape electronic searching practices in Saudi Arabia and the wider Arab region.

4.2 *Meta-Interpretation*

The cross-cluster findings reveal that electronic searching functions as a socio-technical practice embedded within a broader institutional context. Pedagogical practices, skills, infrastructure, and policy frameworks do not operate independently; rather, they interact in ways that either enable or constrain users' searching behaviors. Improvements in one dimension are insufficient unless accompanied by parallel developments in system design, resource availability, and institutional support. The synthesis also suggests that searching practices evolve gradually as users gain exposure to digital tools and adapt to changing technological environments. This progression is shaped by contextual factors such as localized training opportunities, institutional culture, and disciplinary expectations. The author's longitudinal work captures this evolution, showing how users move from basic keyword searching toward more sophisticated strategies as systems mature and instructional support becomes more structured. Finally, policy environments—particularly those related to intellectual property, access rights, and e-transformation—define the boundaries within which searching occurs. Supportive policies facilitate innovation, resource integration, and equitable access, whereas restrictive or unclear policies create uncertainty that affects both faculty, students and researchers. Together, these interpretive insights underscore the need for holistic approaches that address infrastructure, skills, pedagogy, and policy simultaneously in order to strengthen electronic searching practices across educational and research contexts.

4.3 *Cross-Cutting Insights*

Although each cluster addresses a distinct dimension of electronic searching, the studies reveal several recurring patterns that cut across contexts, populations, and methodological approaches. First, the corpus consistently demonstrates that access and infrastructure are foundational for effective electronic searching. Regardless of the user group, limitations in connectivity, system usability, and resource availability serve as barriers that constrain searching behaviors. This suggests that improvements in skills or pedagogy cannot fully compensate for structural weaknesses in the information environment.

Secondly, the studies collectively emphasize the centrality of guided training. Across clusters, users show measurable gains when instruction is explicit, guided, and aligned with real searching tasks. The repetition of this finding across diverse studies indicates that electronic searching is not an intuitive skill but one that develops through structured exposure and practice. This insight reinforces the need for sustained, curriculum-embedded training rather than ad-hoc workshops.

Thirdly, the corpus reveals a persistent gap between resource availability and actual use. Even when electronic resources are technically accessible, users often underutilize them due to limited awareness, insufficient training, or unclear institutional expectations. This pattern appears in studies on infrastructure, skills, and integration alike, suggesting that access alone does not guarantee meaningful engagement.

Finally, the studies highlight the influence of institutional and policy contexts on searching practices. Policies related to access rights, intellectual property, and e-transformation shape the boundaries within which users operate. When policies are supportive and clearly communicated, they facilitate adoption and integration; when they are restrictive or ambiguous, they create friction that affects both teaching and research.

Together, these cross-cutting insights show that electronic searching is shaped by a number of interdependent technical, pedagogical, and institutional factors. The author's research program captures these interactions with clarity, offering a holistic understanding of the conditions that enable or hinder effective searching across higher education contexts.

4.4 *Implications*

The cross-cluster findings of this SR carry several important implications for the development of electronic searching practices in higher education. First, effective searching depends on the alignment of infrastructure, training, resource integration, and policy support; improvements in one area are unlikely to yield sustained impact without parallel progress in the others. Therefore, institutions need to view electronic searching as a systemic capability rather than an isolated skill. Second, the findings highlight the importance of embedding electronic searching instruction within curricula. Structured, guided training, authentic tasks and discipline-specific contexts can significantly enhance users' confidence and proficiency. This means that academic departments, libraries, and instructional units must collaborate to design coherent training opportunities that evolve with technological changes. Third, the gap between resource availability and actual use indicates that institutions must invest in acquiring digital resources as well as in promoting awareness, usability, and relevance. Users are more likely to engage with electronic resources when systems are intuitive, access policies are clear, and support structures are visible and responsive. Finally, the findings point to the need for policies that facilitate digital engagement. Policies related to access rights, intellectual property, and e-transformation should be transparent, consistently applied, and aligned with pedagogical and research goals. When policies are supportive, they create an enabling environment that encourages innovation, equitable access, and deeper integration of electronic resources. Together, these implications suggest that advancing electronic searching requires the integration of technological, pedagogical, and policy considerations into a coherent strategy.

4.5 *Positioning This SR Within the Global Library Information Science SR/MA Research*

When positioned within the broader landscape of global SRs and MA in Library and Information Science (LIS), this author-bounded SR occupies a distinctive and underrepresented space. Most international LIS reviews focus on large-scale database-driven evidence, examining topics such as digital literacy, information-seeking behavior, user experience, bibliometric patterns, and the adoption of electronic resources across institutions and regions. These SRs typically synthesize heterogeneous studies drawn from multiple authors, countries, platforms, and methodological traditions. In contrast, the present SR offers a longitudinal, internally coherent synthesis of a single researcher's contributions over nearly two decades. This approach provides a unique perspective for understanding how electronic searching practices evolve within a sustained research program, rather than across disparate studies. By tracing conceptual, methodological, and thematic continuity across 17 publications, this SR highlights developmental trajectories that are often obscured in large-scale global reviews.

Furthermore, this SR contributes to the global LIS evidence base by foregrounding research from the Arab region which is significantly underrepresented in international SR/MA literature. The corpus documents early and sustained engagement with electronic searching, digital resource integration, and e-transformation at a time when such topics were still emerging globally. As a result, the review not only fills a regional gap but also offers insights that parallel, complement, and in some cases precede international developments.

Finally, by synthesizing an author-bounded corpus, this SR demonstrates the value of alternative SR models that capture depth, coherence, and developmental progression. It shows how focused, programmatic research can illuminate the interplay between infrastructure, skills, pedagogy, and policy in ways that large-scale reviews may overlook. In doing so, it positions the author's work as a meaningful contribution to the global conversation on electronic searching and digital information practices.

4.6 *Limitations of This SR*

Although this author-bounded SR provides a synthesis of 17 studies on electronic searching, several limitations should be acknowledged. First, the scope of the review is intentionally restricted to a single researcher's body of work. While this approach offers depth, continuity, and conceptual coherence, it limits the generalizability of the findings to broader populations, institutions, or regional contexts. The insights generated here reflect the evolution of one research program rather than the full diversity of global LIS literature.

Second, the review is shaped by the availability and accessibility of the author's publications. Some early works of the author, particularly those published before the widespread digitization of academic materials, such as articles in major Saudi print newspapers (e.g., al-Riyāḍ, al-Jazīrah, al-Iqtisādiyyah, al-Madīnah) and in the university newspaper Risālat al-Jāmi'ah, were not

indexed in major databases such as Google Scholar. Nevertheless, some of these works were retrieved through alternative platforms such as ResearchGate; their limited discoverability may have influenced the completeness of the corpus.

Third, although widely used LIS frameworks and standardized assessments were not employed, this was appropriate for the nature of the author's research program for the following reasons. (i) the instructional interventions were not part of formal LIS courses or certification requirements, but were designed as supplemental support for language education, academic skills development, and research training. (ii) Most training modules were non-credit and offered outside formal curricula, often upon student or faculty request, which made standardized LIS assessments irrelevant to the instructional purpose. (iii) when electronic-searching instruction was embedded in ESP courses, the author developed context-specific assessment tools aligned with the skills taught. While suitable for evaluating targeted competencies, the absence of shared instruments reduces comparability across studies and limits the potential for meta-analytic aggregation.

Fourth, the review reflects the technological and institutional contexts of the periods in which the studies were conducted. Given the rapid evolution of electronic searching tools, digital infrastructures, and information-seeking behaviors, some findings may not fully align with current technological realities. However, these studies remain valuable for understanding historical trajectories and foundational developments.

Finally, as with all author-bounded reviews, the interpretive lens is shaped by the coherence of a single scholarly voice. This provides depth but may also introduce thematic or conceptual biases inherent in any long-term research program.

Despite these limitations, the review offers a meaningful and historically grounded contribution to the understanding of electronic searching, particularly within the context of Saudi Arabia and the Arab region.

4.7 *Future Research Directions*

The findings of this author-bounded SR point to several promising directions for future research in electronic searching and digital information practices. **First**, there is a need for studies that examine how emerging technologies, such as AI-assisted search tools, generative-AI query expansion, semantic search engines, conversational search interfaces, and personalized recommendation systems, reshape users' searching behaviors. As search environments increasingly integrate natural-language interaction, multimodal retrieval, and context-aware personalization, understanding how these tools influence strategy development, information evaluation, cognitive load, and user autonomy becomes essential.

Second, future research should investigate how users interact with hybrid search ecosystems that combine traditional database structures with AI-driven retrieval models. This includes examining how users interpret AI-generated summaries, negotiate system-suggested keywords, and evaluate the reliability of machine-generated relevance rankings. Research is also needed on how AI-mediated search affects academic integrity, citation practices, and the transparency of search processes.

Third, future studies should explore electronic searching skills and practices within more diverse institutional and disciplinary contexts. The existing corpus focuses primarily on higher-education settings; expanding this work to include public libraries, and professional communities would provide a more comprehensive understanding of searching practices across the information landscape. Comparative studies across disciplines could also illuminate how domain-specific norms shape search strategies and tool adoption.

Fourth, there is a need for deeper investigation into the policy dimensions of electronic searching. Future research could examine how institutional policies, licensing agreements, intellectual property frameworks, data-governance regulations, and national e-transformation initiatives influence access, equity, and resource integration. These questions are increasingly relevant as institutions navigate rapid digital expansion, AI regulation, and shifting global information-governance standards.

Fifth, future research should consider mixed-methods, longitudinal, and meta-analytic approaches that allow for deeper synthesis across studies. As more LIS research becomes digitized, interoperable, and machine-readable, opportunities will emerge for large-scale evidence integration using automated text-mining, bibliometric mapping, and AI-supported meta-synthesis. Such approaches can complement the depth of author-bounded reviews with the breadth of multi-author, multi-context analyses.

Finally, research is needed on the ethical, cultural, and linguistic dimensions of AI-mediated searching in Arabic contexts. This includes examining how AI systems handle Arabic morphology, dialect variation, transliteration, and culturally specific information needs, as well as how users perceive trust, bias, and transparency in AI-driven search environments.

5. Recommendations and Conclusion

Based on the rapid transformation of digital information environments, and since students, researchers and faculty live in the AI age, the current study offers the following recommendations for supporting researchers, students, and institutions in utilizing AI-assisted electronic searching:

Since many researchers no longer need to go to university libraries, do not need subscription-based databases or library logins, training should focus on searching platforms such as Google Scholar, Semantic Scholar, SciTech, Connected Papers, Research Rabbit, Elicit, Scite.ai, Iris.ai, Dimensions.ai, Lens.org, Scholarcy, Connected Papers, Research Rabbit, Elicit, Scite.ai and others. These can be accessed from home and even over smart phones or tablets. To search these platforms, students and researchers also need training in selecting effective search terms, changing the search terms to obtain better references, reformulating queries when results are insufficient, and using Boolean logic with AI tools.

Libraries and academic units should offer workshops, micro-credentials, and online modules that develop AI literacy, focusing on responsible use, bias awareness, and the evolving landscape of digital scholarship. Training should include hands-on practice with AI-assisted search tools and reference-checking workflows.

Since AI tools generate fake references, students and researchers need to evaluate the credibility of open-web sources, must learn to verify accuracy, detect fabricated or incomplete references, and cross-check metadata using trusted sources such as Google Scholar, CrossRef, and publisher websites. AI-assisted searching should complement and not replace scholarly judgment. Researchers should combine AI tools with manual verification, citation tracing, and critical reading of original sources to ensure accuracy and depth.

Additionally, universities should set clear policies that govern the use of AI in literature searching, citation generation, and academic writing. Guidelines should address transparency, verification responsibilities, acceptable levels of AI assistance, declaration of AI use, and the ethical implications of relying on algorithmic tools.

Moreover, this study recommends that Arab researchers conduct SRs and MAs in LIS that synthesize research conducted across different areas of LIS in Arab countries. Such evidence-based SRs would strengthen regional scholarship, reveal research gaps, and position Arab LIS research within global conversations.

Finally, investigating Arab researchers' perceptions of AI-assisted research practices and how Arab researchers view the use of AI in reference searching, research preparation, editing, translation, data analysis, and academic writing is still open for further investigations in the future. Understanding researchers' expectations, concerns, and actual practices will help institutions design training programs and policies that reflect real needs and cultural contexts.

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ORCID ID: https://orcid.org/0000-0002-6255-1305

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