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A SYSTEMATIC REVIEW OF THE INFLUENCE OF INFORMATION SYSTEM IMPLEMENTATION ON THE EFFECTIVENESS OF KNOWLEDGE RETRIEVAL IN THE ARCHIVAL CONTEXT

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Abstract
In the era of digital transformation, archival institutions increasingly rely on information systems to ensure sustainable access to organizational knowledge. The effectiveness of knowledge retrieval in archival systems has become increasingly critical in the digital era. However, existing studies remain fragmented, with limited integrative analysis of technological, organizational, and user-related factors. This study addresses this gap by systematically reviewing the influence of information system implementation on knowledge retrieval effectiveness in archival contexts. A Systematic Literature Review (SLR) was conducted on 28 peer-reviewed articles indexed in Scopus and Taylor & Francis, published between 2015 and 2025. The selected studies were analyzed using a structured classification approach to identify key variables, measurement indicators, and implementation challenges. The findings reveal that knowledge retrieval effectiveness is shaped by five interconnected dimensions: digital infrastructure transformation, metadata standardization, system interoperability, retrieval system integration, and cross-professional collaboration. Effectiveness is commonly assessed using retrieval performance metrics, metadata quality, user interface, user experience, and data accessibility. Despite these advancements, persistent challenges continue to hinder optimal system performance. This study contributes to the literature by proposing an integrative analytical perspective that links technological, organizational, and user-centered dimensions in evaluating archival knowledge retrieval, thereby addressing the lack of synthesis in prior research. The results highlight that successful implementation depends not only on technological capability but also on alignment with governance structures and user readiness. These findings have practical implications for archival institutions and policymakers in designing adaptive, interoperable, and user-oriented information systems to enhance sustainable access to knowledge
Keywords: Information system, knowledge retrieval, archives

INTRODUCTION

The rapid digital transformation of organizations has fundamentally reshaped how knowledge is created, preserved, and retrieved. Archival institutions are no longer limited to preserving historical records; they increasingly function as strategic infrastructures supporting organizational memory, decision-making, and knowledge reuse. Within this transformation, knowledge management has emerged as a critical organizational process aimed at managing, storing, and distributing knowledge to enhance operational effectiveness (Agrifoglio, n.d.).

In the archival context, knowledge management is closely linked to records management practices supported by information systems. The implementation of information systems operationalizes knowledge management through technological mechanisms that enable efficient information organization, preservation, and access. One of the primary objectives of information system implementation in archival management is to improve knowledge retrieval effectiveness, defined as the process of searching, accessing, and extracting relevant information from digitized archival collections (Bunn, 2016).

Knowledge management theory suggests that organizational knowledge generates value only when it can be effectively retrieved and reused. Archival systems contribute to this process through classification structures, metadata standards, and digital preservation mechanisms that ensure long-term accessibility. However, despite the significant potential offered by technological advancements, the implementation of archival information systems continues to encounter persistent challenges. Technical limitations, organizational regulations, governance structures, and use behavior frequently constrain the effectiveness of the knowledge retrieval process (Capurro et al., 2023).

Previous studies demonstrate that information system implementation can significantly enhance knowledge management practices, particularly in improving archival search performance. Structured metadata, standardized data organization, and user-friendly interfaces with archival systems (Boutsi et al., 2019). Moreover, research highlights that user training, professional competencies, and integration between newly developed systems and legacy archival infrastructures remain major challenges affecting implementation outcomes (Bunn, 2016).

Despite growing scholarly attention, existing research tends to focus primarily on technical dimensions of information systems, such as system architecture or retrieval algorithms. Studies addressing the broader relationship between information system implementation and knowledge retrieval effectiveness in archival management remain limited, particularly concerning methodological approaches for measuring retrieval effectiveness (Burke et al., 2021). For instance, research by Burke et al (2021) emphasizes that metadata quality and data structure significantly influence retrieval efficiency, while Capurro et al (2023) argue that advanced technologies such as Machine Learning and Natural Language Processing (NLP) can enhance search accuracy but introduce new integration challenges between legacy and modern systems.

Although these studies provide valuable insights, the literature remains fragmented. Existing research often examines technological innovation, organizational governance, or user interaction separately rather than synthesizing these dimensions into an integrated analytical perspective. Consequently, the conceptual understanding of how information system implementation influences archival knowledge retrieval effectiveness is still insufficiently consolidated. Furthermore, systematic reviews conducted in related domains, such as information retrieval systems, digital libraries, and knowledge management, rarely address

archival, specific characteristics, including provenance, authenticity, contextual integrity, and long-term preservation requirements.

This fragmentation reveals a clear research gap: the absence of a comprehensive synthesis that critically examines the multidimensional relationship between information system implementation and knowledge retrieval effectiveness within archival contexts. Addressing this gap is particularly important as archival institutions increasingly operate within complex digital ecosystems requiring interoperability, governance alignment, and user-centered system design.

RESEARCH METHOD

This study employed a Systematic Literature Review (SLR) to examine the influence of information system implementation on knowledge retrieval effectiveness in archival contexts. The review process followed the PRISMA framework, which provides standardized procedures to ensure transparency, reproducibility, and methodological rigor in evidence synthesis.

The PRISMA approach was selected because systematic reviews in information systems and archival studies increasingly require structured reporting to minimize selection bias and enhance research validity.

This research explores information systems' influence on archival knowledge retrieval, focusing on success factors, effectiveness indicators, and operational challenges in knowledge retrieval

RQ1: Which variables most significantly influence the effectiveness of knowledge retrieval within the context of archival organizations?

RQ2: What are the most common indicators used in the literature to measure the effectiveness of knowledge retrieval in digital archives?

RQ3: What are the challenges encountered in the implementation of archival information systems, specifically regarding the archival knowledge retrieval process?

These questions were formulated to synthesize technological, organizational, and user-centered perspectives identified in prior research.

Literature was retrieved from two internationally recognized scholarly databases, Scopus and Taylor & Francis Online. These databses were selected due to their extensive coverage of peer-reviewed publications in information science, archival studies, and information system research.

The search covered publications from 2015-2025 to capture contemporary developments in digital archival systems, artificial, intelligence applications, and modern knowledge retrieval practices.

The search strategy used Boolean operators (AND and OR):

("archival information system" OR "IT adoption" OR "system development" OR "records management system" OR "digital archive*" OR "electronic record*")

AND

("knowledge retrieval" OR "document retrieval" OR "information retrieval" OR "record retrieval" OR "search effectiveness")

AND

("archival context" OR "records management" OR "archives")

An asterisk (*) wildcard was used to capture term variations, such as “digital archive”, “digital archives”, or “digital archived” as well as “electronic record”, “electronic records”, or “electronic

recording", broadening the search to ensure a comprehensive and relevant article selection. The search workflow is detailed in Figure 1.

The article selection process followed four PRISMA stages:

a. Identification
   1) Scopus: 223 articles
   2) Taylor & Francis: 173 articles
   3) Total identified records: 396 articles
b. Screening
   Articles were filtered based on publication year, language, and document type, resulting in 36 articles.
c. Eligibility Assessment
   Titles and abstracts were reviewed to assess topical relevance, reducing the number to 32 articles.
d. Inclusion
   Full-text evaluation resulted in 28 eligible studies included in the final synthesis.

The workflow is illustrated in Figure 1.

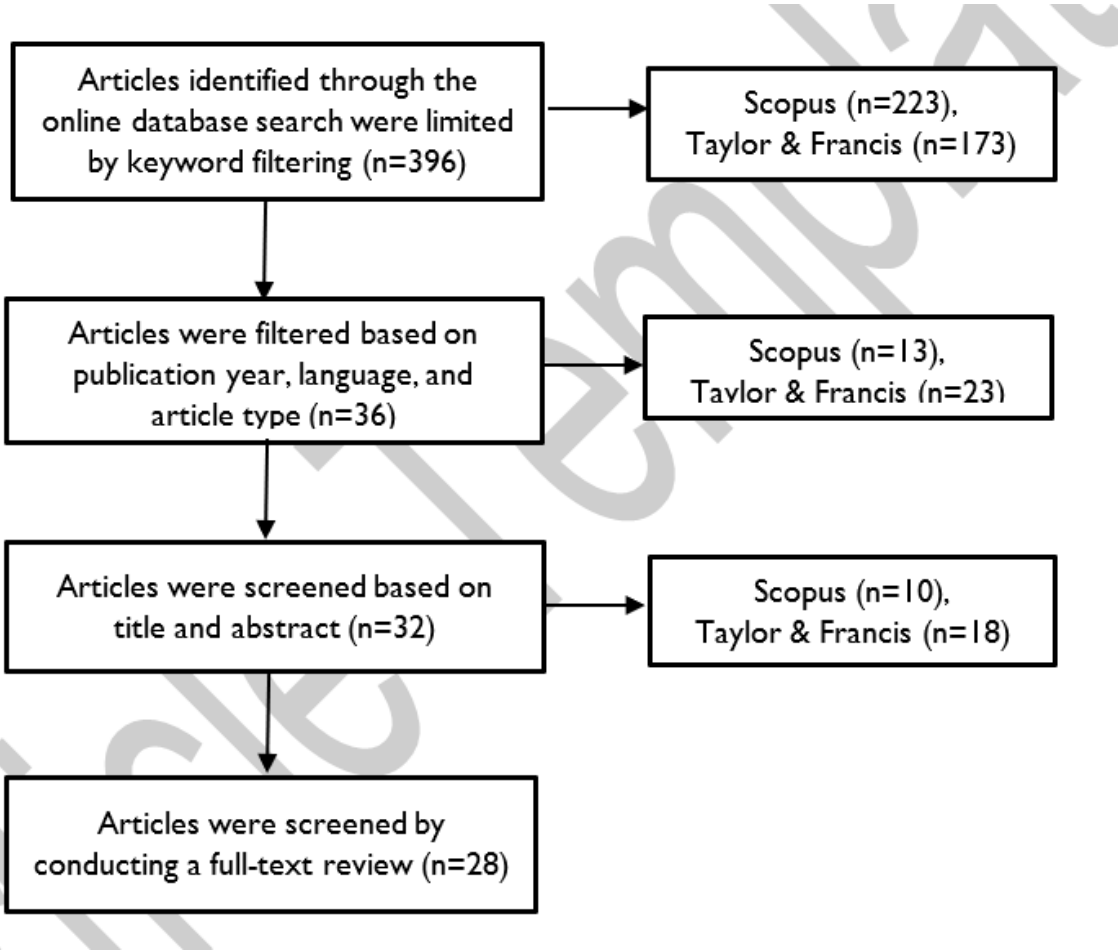

Figure 1. Article search workflow
Source: Data processing, 2025

Based on the search strategy, the inclusion and exclusion criteria were established as shown in Table 1.

Table 1. Determination of Inclusion and Exclusion Criteria

No.	Inclusion	Exclusion
1	Research articles concerning the implementation of information systems in an archival context related to the improvement of knowledge retrieval effectiveness.	Articles that are unrelated to archival information system implementation or do not focus on knowledge retrieval within digital archives.
2	Articles published between 2015 and 2025 will be reviewed to ensure that the information obtained is current and relevant.	Articles published prior to 2015.
3	Articles that identify variables influencing knowledge retrieval effectiveness, indicators for measuring effectiveness, and challenges in information system implementation.	Articles that do not discuss the variables influencing knowledge retrieval effectiveness, measurement indicators, or the challenges of information system implementation.
4	Articles written in English.	Articles written in languages other than English.

The criteria were designed to balance recency, methodological quality, and conceptual relevance, ensuring that only studies directly contributing to archival knowledge retrieval analysis were synthesized.

To enhance methodological rigor and minimize potential selection bias, the study implemented a multi-stage quality assessment process throughout the screening procedure. The evaluation began with independent title and abstract screening to ensure initial relevance to archival information systems and knowledge retrieval effectiveness. This was followed by a full-text assesment to verify conceptual alignment with the research objectives and inclusion criteria. Articles presenting ambiguous relevance were re-examined through iterative comparison against predefined criteria to maintain consistency in decision-making. This systematic evaluation process strengthened the reliability of article selection while reducing subjectivity in the review process.

A structured data extraction protocol was developed to ensure systematic and comparable analysis across the selected studies. Relevant information was extracted from each article using a standardized template that included research objectives, methodological approaches, archival contexts, identified variables influencing knowledge retrieval effectiveness, measurement indicators, and reported implementation challenges. The use of a uniform extraction framework enabled consistent organization of findings and facilitated cross-study comparison, thereby supporting transparent synthesis of diverse research evidence.

The selected 28 studies were analyzed using a thematic synthesis approach suitable for heterogeneous research designs commonly found in archival and information systems research. The analysis began with open coding to identify recurring concepts and patterns related to information system implementation and knowledge retrieval. These codes were subsequently categorized and grouped into broader analytical themes through an iterative interpretative process. The synthesis resulted in three primary thematic domains: factors influencing knowledge retireval effectiveness, indicators used to evaluate retrieval performance, and challenges associated with archival information system implementation. Rather than employing statistical aggregation, this study adopted an interpretative synthesis strategy to develop an integrated understanding of relationships across technological, organizational, and user-centered dimensions.

RESULT AND DISCUSSION

Publication Chronological Overview

Over the last decade (2015-2025), the publication landscape regarding information retrieval effectiveness has demonstrated fluctuating yet progressive dynamics. Beginning with a focus on digital infrastructure transformation between 2015 and 2019, research intensity began to rise in 2020 with five publications. This research trend increased significantly during the 2023-2025 period, totaling nine articles. During this time, a notable shift in focus occurred toward data standardization, interoperability, and the integration of retrieval systems. Overall, these findings indicate that archival organizations are increasingly prioritizing sophisticated information systems to ensure that knowledge remains accessible.

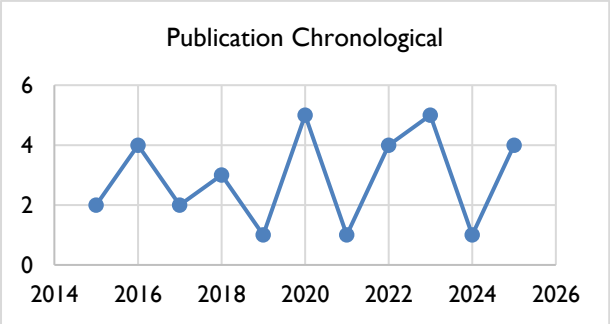

Diagram 1. Publication by years (2015-2025)
Source: Data processing, 2025

Publication Methodologies Overview

Over the past ten years, the methodological approaches employed by researchers to examine knowledge retrieval effectiveness within archival organizations have demonstrated a diverse range of approaches, with a predominant focus on qualitative research. A total of 18 articles utilized qualitative methods, indicating that research efforts have largely been directed toward gaining an in-depth understanding of user experiences, case studies, and the analysis of policy challenges within archival contexts.

Meanwhile, 10 articles adopted quantitative methods, focusing on experimental research to test system performance, such as algorithmic accuracy or the optimization of digital infrastructure in cloud environments. In addition to empirical studies, one article utilized a mixed-methods approach, combining extensive survey data with in-depth interviews, while two articles employed conceptual research methods focusing on frameworks and knowledge management theories.

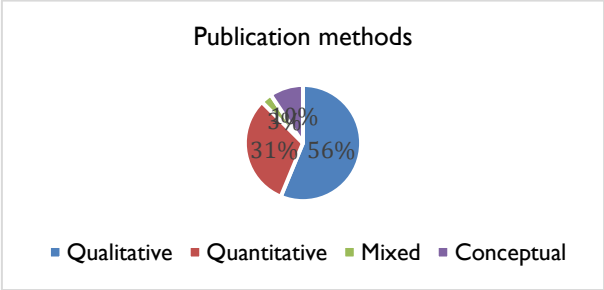

Diagram 2. Publication methods
Source: Data processing, 2025

Publication Regions Overview

Geographically, the studies are distributed across four main regions: Europe, America, Australia, and Africa. Europe emerged as the most productive region with six articles, followed by the Americas with four articles, Australia with two articles, and Africa with one article. The remaining articles were conducted in unidentified locations, as the research was universal in nature and not confined to specific geographical boundaries.

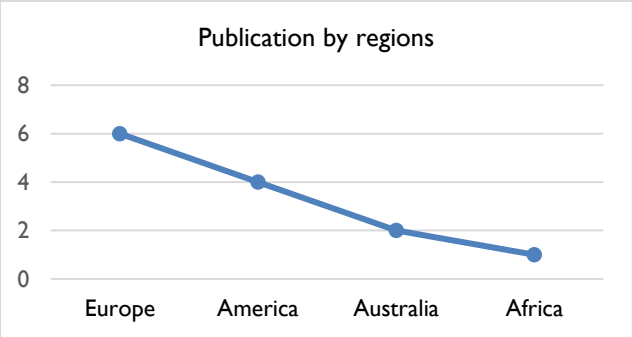

Diagram 3. Publication by regions
Source: Data processing, 2025

C.1 RQ1: What are the most significant variables influencing knowledge retrieval effectiveness within the context of archival organizations?

The synthesis identifies four dominant variables shaping archival knowledge retrieval effectiveness. There are: (1) Digital infrstructure transformation; (2) Data standardization and interoperability; (3) Retrieval system integration; and (4) Croess-professional collaboration. Table 1 presents information regarding the impact of information system implementation on knowledge retrieval, including the key factors that influence the effectiveness of archival searches.

Table 1. Factors Influencing Archival Knowledge Retrieval Effectiveness

Context	References	N
Digital infrastructure transformation	(Boutsi et al., 2019); (Capurro et al., 2023); (Guha et al., 2022; Henninger, 2016; Kolaneci, 2023; Lenkart, 2016; Lymn & Jones, 2020; Satish et al., 2025; Sensuse, n.d.; Tsabedze, 2023; Urberg, 2018; Yan, 2024; Zhao & Du, 2022; Zhu et al., 2023).	14
Data standardization and interoperability	(Bunn, 2016; Burke et al., 2021; Danley, 2023; Huvila, 2016; Mukherjee & Das, 2020; Sabharwal, 2021; Sandy et al., 2018; Sarkar & Biswas, 2020; Steiner & Koch, 2015; Torabi et al., 2025; Zhao & Du, 2022; Zhu et al., 2023).	13
Integration of information retrieval systems	(Bunn, 2016; Ma, 2022; Macleod et al., 2025; Yan, 2024).	4
Cross-professional collaboration	(Al-emran et al., 2018; Sabharwal, 2021).	2

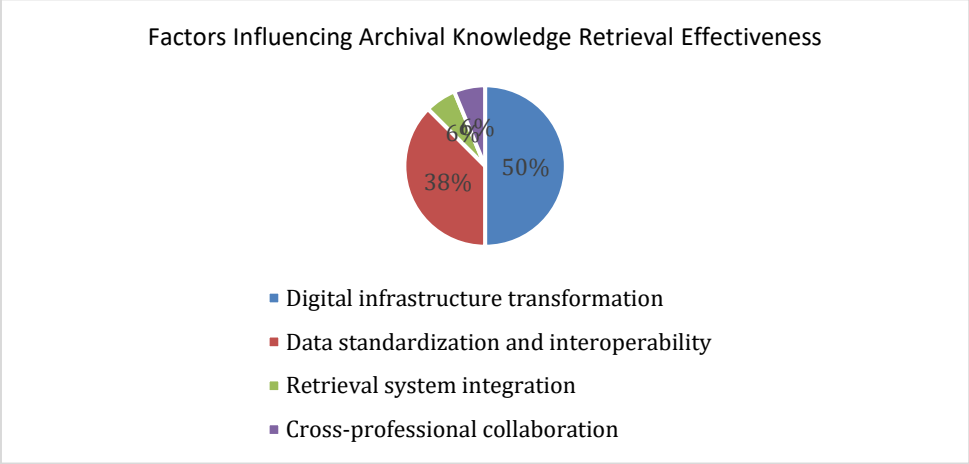

Diagram 4. Factors Influencing Archival Knowledge Retrieval Effectiveness
Source: Data processing, 2025

Digital Infrastructure Transformation

Digital infrastructure transformation emerges as the most frequently discussed factor, indicating that technological modernization remains the foundational requirement for effective knowledge retrieval. Cloud-based archival system and advanced search architectures significantly improve access speed and scalability (Zhao & Du, 2022).

However, the literature also revelas an important nuance: technological deployment alone does not guarantee improved retrieval effectiveness. Several studies emphasize that infrastructure must be aligned with user workflows and organizational needs (Tsabedze, 2023). This finding supports socio-technical theory, which argues that systems performance depends on alignment between technology, people, and institutional processes.

Data Standardization and Interoperability

Data standardization and interoperability appear as critical enablers of knowledge integration across archival environments. For example, automated retrieval approaches such as multilingual Handwritten Text Recognition (HTR) models significantly reduce search errors and increase retrieval efficiency in digitized archival collections (Capurro et al., 2023). Similarly, the application of authority control mechanisms, such as the Name Authority Cooperative (NACO), utilized by Serbia and Yugoslavia, promotes consistency in archival organization, simplifies access to military records, and ensures accuracy in data management (Danley, 2023).

Interoperability, meanwhile, refers to the capacity of digital archival systems to exchange and utilize infrastructure that frequently operate using multiple metadata standards to maintain accessibility and long-term usability of archival materials (Bunn, 2016). Effective data integration across institutional units enables the consolidation of dispersed information into an interconnected system, reducing duplication, minimizing errors, and improving organizational knowledge coordination (Urberg, 2018). Consequently, the combination of data standardization and interoperability forms a foundational requirement for developing well-managed and sustainable archival systems (Zhao & Du, 2022; Zhu et al., 2023).

Despite these advantages, the literature also reveals an important tension. While global standardization enhances interoperability and scalability, standardized metadata models may overlook local archival contexts, cultural specificity, and institutional practices. This contradiction reflects a recurring challenge in archival science: balancing universal standards

with contextual representation. Therefore, interoperability should not be understood merely as technical compatibility but as a form of organizational coordination that aligns technological infrastructures, archival principles, and knowledge practices across systems.

Retrieval System integration

Retrieval system integration represents a critical dimension in enhancing knowledge retrieval effectiveness within archival environments. Research by Yan (2024) introduced the Smart Archive Management System (SAMS), which combines big data and cloud technologies to optimize archival management processes while accelerating data access and information sharing. Similarly, (Ma, 2022) developed an algorithm based on the Self-Organizing Feature Mapping Network for key information extraction from digital archives, ensuring that extracted data is both relevant and rapidly accessible.

These technological developments indicate a broader transformation in archival systems, from passive repositories toward intelligent discovery environments capable of supporting dynamic knowledge exploration. Integrated retrieval architectures allow archives to move beyond simple keyword searching toward context-aware and automated knowledge extraction processes.

Meanwhile, (Macleod et al., 2025) focused on integrating more inclusive terminology within metadata systems while maintaining interoperability with global cataloging systems, such as the Library of Congress Subject Headings (LCSH). Both studies demonstrate that integrating retrieval systems into archival management requires adjustments to terminology and metadata to ensure results are more relevant and aligned with user needs.

Consequently, while integrated retrieval systems offer substantial improvements in retrieval performance, innovation frequently produces transitional instability before organizational benefits are fully materialized. This suggests that retrieval system integration should be understood as an ongoing socio-technical transformation requiring simultaneous alignment of technology, metadata governance, and institutional practices rather than a one-time technological upgrade.

Cross-Professional Collaboration

Cross-professional collaboration is essential to improve the effectiveness of retrieval systems within archival organizations. Sabharwal (2021) explains that various professionals, such as archivists and IT specialist, must collaborate in the management and organization of archives to enable users to access integrated archival records. (Al-emran et al., 2018) also emphasize that cross-professional collaboration allows organizations to optimize the use of technology in supporting efficient, knowledge-based archival management. Furthermore, (Bunn, 2016) asserts that the involvement of diverse professions in the decision-making process and system design is instrumental in creating digital archival platforms that are responsive to user needs, thereby enhancing the effectiveness of information retrieval.

RQ2: What are the most common indicators used in the literature to measure knowledge retrieval effectiveness in digital archives?

Based on the analyzed articles, the reviewed literature identifies four dominant measurement dimensions, such as: (1) Information retrieval metrics; (2) Metadata management; (3) Data integrity and accessibility; and (4) User interface and user experience.

Table 2 presents the information regarding the indicators used to measure knowledge retrieval effectiveness in digital archives.

Table 2. Indicators for Measuring Knowledge Retrieval Effectiveness in Digital Archives

Context	References	N
Information retrieval metrics	(Bunn, 2016; Burke et al., 2021; Capurro et al., 2023; Danley, 2023; Kolaneci, 2023; Ma, 2022; Sandy et al., 2018; Satish et al., 2025; Sensuse, n.d.; Steiner & Koch, 2015; Torabi et al., 2025; Yan, 2024; Zhao & Du, 2022; Zhu et al., 2023).	17
Metadata management	(Al-emran et al., 2018; Bunn, 2016; Burke et al., 2021; Capurro et al., 2023; Danley, 2023; Guha et al., 2022; Ma, 2022; Macleod et al., 2025; Sandy et al., 2018; Sensuse, n.d.; Steiner & Koch, 2015; Torabi et al., 2025; Yan, 2024; Zhao & Du, 2022; Zhu et al., 2023).	16
Data integrity and accessibility	(Al-emran et al., 2018; Bunn, 2016; Huvila, 2016; Kolaneci, 2023; Lenkart, 2016; Lymn & Jones, 2020; Sensuse, n.d.; Tsabedze, 2023).	8
User interface and user experience	(Boutsi et al., 2019; Kolaneci, 2023; Sandy et al., 2018; Yan, 2024).	4

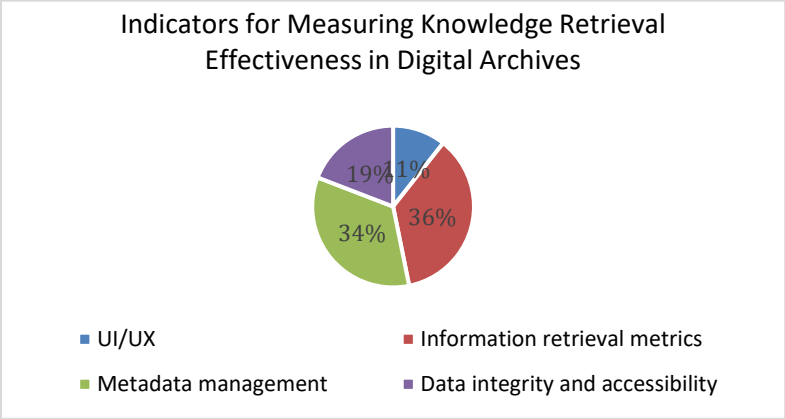

Diagram 5. Indicators for Measuring Knowledge Retrieval Effectiveness in Digital Archives
Source: Data Processing, 2025

Information Retrieval Metrics

Information retrieval metrics are essential for assessing the quality of searches within digital archives to ensure that the search results provided are relevant and accurate (Bunn, 2016). Precision, recall, and F1-Score serve as indicators for evaluating the performance of retrieval systems within the context of digital archives (Bunn, 2016; Burke et al., 2021). Furthermore, these metrics are also employed to evaluate the relevance of search results, as well as the speed and efficiency of digital archival systems (Danley, 2023).

Torabi et al (2025) explain that the implementation of Artificial Intelligence (AI) models in image processing and metadata requires metrics to measure the accuracy and quality of the generated descriptions, which in turn impact the effectiveness of cataloging systems. The use of information retrieval metrics in digital archives serves not only to evaluate search results but also to enhance user interaction with the system and improve overall search quality.

Despite their importance, the literature increasingly argues that technical performance metrics alone are insufficient to capture the full effectiveness of archival knowledge retrieval. Several studies emphasize the need to integrate algorithmic indicators with user-centered

evaluation approaches, including usability, user satisfaction, and interaction quality. This shift reflects a broader transformation in information science toward human-centered system evaluation, where retrieval success is defined not only by computational accuracy but also by meaningful user engagement and accessibility outcomes.

Consequently, information retrieval metrics should be understood as multidimensional evaluation tools that bridge technological performance and user experience, supporting a more holistic assessment of knowledge retrieval effectiveness in contemporary archival environments.

Metadata Management

Metadata management is a commonly used indicator to measure knowledge retrieval effectiveness. Effective metadata management enables structured information handling and faster access to relevant archives. Proper metadata management facilitates better data integration, thereby enhancing the quality of user searches (Bunn, 2016). (Capurro et al., 2023) state that structured metadata allows for more efficient digital archive management. This aligns with research by (Ma, 2022), which suggest that the use of algorithms for extracting information from archives can be improved with the support of organized metadata. Accurate metadata not only assists in archival management but also increases the accessibility and effectiveness of knowledge retrieval within digital archives (Guha et al., 2022; Torabi et al., 2025).

User Interface (UI) and User Experience (UX)

User Interface (UI) and User Experience (UX) are critical indicators in measuring knowledge retrieval effectiveness within digital archives. This is primarily related to how users interact with the systems to locate and access information. (Boutsi et al., 2019) emphasize the importance of an interactive and intuitive user interface, which can facilitate faster and more efficient information searches. Similarly, (Kolaneci, 2023) highlight that a well-designed user interface simplifies navigation and data archival management, a responsive user interface and continuously improved user experience enable easier access to vital information. A UX-based approach in developing digital archival systems not only enhances user interaction with the system but also increases user satisfaction by making archival searches faster and more relevant (Sandy et al., 2018; Yan, 2024).

Data Integrity and Accessibility

Data integrity and accessibility serve as key indicators in measuring the effectiveness of retrieval systems within the context of digital archives. (Huvila, 2016) emphasize that information accessibility can be maintained if data is managed through clear procedures and remains easily accessible to users. (Lymn & Jones, 2020) underscore the importance of data integrity in preserving the quality and accuracy of information stored in digital archival systems. Without guaranteed data integrity, users will face difficulties in accessing correct and relevant information. Furthermore, (Zhao & Du, 2022) notes that the use of advanced technology to facilitate data management and maintain information accessibility can significantly enhance knowledge retrieval effectiveness in the digital archival context.

RQ3: What are the challenges faced in the implementation of archival information systems, particularly regarding the process of archival knowledge retrieval?

Based on the analysis of relevant articles, the challenges in implementing archival information systems, specifically concerning the knowledge retrieval process within archival organizations are detailed in table 3.

Table 3. Challenges in the Implementation of Digital Archival Knowledge Retrieval

Context	Reference	N
Human resource readiness and user resistance	(Al-emran et al., 2018; Bunn, 2016; Capurro et al., 2023; Delve et al., 2015; Guha et al., 2022; Henninger, 2016; Huvila, 2016; Kolaneci, 2023; Lenkart, 2016; Ma, 2022; Macleod et al., 2025; Sabharwal, 2021; Sandy et al., 2018; Sensuse, n.d.; Torabi et al., 2025; Tsabedze, 2023; Yan, 2024; Zhu et al., 2023).	20
System interoperability and legacy integration	(Boutsi et al., 2019; Bunn, 2016; Delve et al., 2015; Dong et al., 2018; Kolaneci, 2023; Lenkart, 2016; Mukherjee & Das, 2020; Sabharwal, 2017, 2021; Steiner & Koch, 2015; Zhao & Du, 2022).	11
Management metadata	(Burke et al., 2021; Danley, 2023; Dong et al., 2018; Huvila, 2016; Lymn & Jones, 2020; Mukherjee & Das, 2020; Sabharwal, 2017; Sandy et al., 2018; Steiner & Koch, 2015; Torabi et al., 2025).	10
Policy and regulatory frameworks	(Delve et al., 2015; Dong et al., 2018; Henninger, 2016; Lymn & Jones, 2020; Sabharwal, 2021; Sandy et al., 2018).	6

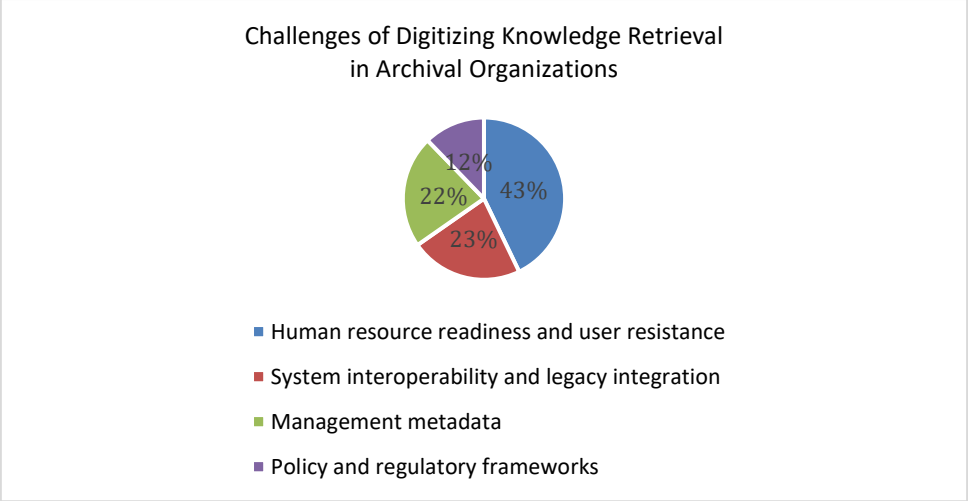

Diagram 6. Challenges of Digitizing Knowledge Retrieval in Archival Organizations
Source: Data processing, 2025

Human Resource Readiness and User Resistance

A significant challenge in the implementation of digital archival systems is human resource readiness and user resistance. (Bunn, 2016) notes that many archivists face difficulties in adapting to new technologies due to a lack of adequate training and readiness to utilize more advanced systems. (Capurro et al., 2023) emphasize that the greatest challenge in system implementation is the low level of acceptance among users who are accustomed to manual archival management methods. Research conducted by (Lenkart, 2016) indicates that user resistance towards new system is often caused by uncertainty regarding how the technology will affect theory workflows. Frequently, users perceive that the implemented technology will

increase their workload, or they feel insufficiently trained to utilize the new system effectively. Based on the above, efforts to enhance human resource readiness through continues training and the reduction of barriers to new technology are essential to ensure that archival information systems can be successfully implemented and provide optimal benefits.

System Interoperability and Legacy Integration

The primary challenges in implementing archival information systems involve interoperability issues and integration with legacy systems, as new platforms often struggle to communicate with traditional archives, thereby hindering knowledge retrieval effectiveness (Bunn, 2016). Projects like E-ARK demonstrate that diverse infrastructures require consistent metadata harvesting mechanisms to ensure seamless data exchange (Delve et al., 2015). Furthermore, integrating legacy systems with modern platforms necessitates significant adjustments to data formats and metadata structures, where inconsistencies often slow down data migration and limit efficient cross-platform management (Sabharwal, 2021).

Metadata Management

Metadata management represents a major challenge in implementing archival information systems, as inconsistent or poorly structured metadata can significantly impede search processes and reduce results relevance (Burke et al., 2021). Effective management is often hinders by a lack of alignment between diverse systems and varying standards, which complicates data integration and accurate information access (Danley, 2023). Furthermore, ensuring interoperability and applying clear, consistent metadata standards are essential for maximizing the use of digital archives and facilitating seamless access across different platforms (Huvila, 2016; Lymn & Jones, 2020). Ultimately, robust metadata management is vital for efficient knowledge retrieval, as it directly impacts the speed, accuracy, and overall quality of information searches.

Policy and Regulatory Frameworks

Policy and regulatory frameworks present significant challenges to the effectiveness of knowledge retrieval in digital archives, as differing national or regional policies can hinder system interoperability through inconsistent metadata standards and data retention rules (Delve et al., 2015). Furthermore, inadequate or outdated regulations may restrict access and limit the management of digital records, thereby reducing the overall efficiency of information retrieval systems (Henninger, 2016; Sandy et al., 2018). Consequently, updating these frameworks to be more flexible and aligned with technological advancements is essential to facilitate cross-institutional data exchange and to fully leverage digital archival capabilities for improves knowledge retrieval.

CONCLUSION

This study employed a systematic literature review to examine the influence of information system implementation on knowledge retrieval effectiveness within archival contexts. The findings demonstrate that effective knowledge retrieval is shaped by the interaction between technological infrastructure, metadata standardization, organizational governance, and user-centered practices. Rather than functioning solely as preservation tools,

archival information systems increasingly operate as active knowledge infrastructures that support information access, decision-making, and organizational learning.

From a theoretical perspective, this study contributes by integrating archival science, knowledge management, and information systems research into a socio-technical understanding of archival information systems. The results highlight that technological advancement alone is insufficient; successful retrieval effectiveness requires alignment between technological capability, institutional readiness, and human interaction.

Practically, archival institutions are encouraged to prioritize interoperability strategies, metadata governance, professional capacity development, and user-oriented systems design. At the policy level, supportive regulatory frameworks and long-term digital preservation strategies are essential to ensure sustainable knowledge accesibility.

This study is limited by its reliance on selected indexed publications and heterogeneous research designs. Future research should focus on empirical validation models, cross-institutional comparisons, and the exploration of technologies such as artificial intelligence to further enhance intelligent archival retrieval systems

SUGGESTION

Based on a systematic review of 28 indexed articles (2015-2025), this study demonstrates that the effectiveness of knowledge retireval in digital archival systems in influenced by complex socio-technical dynamics, which include cloud infrastructure transformation, metadata standardization, system interoperability, and cross-professional collaboration. The success of these systems is generally measured through a combination of technical retrieval metrics (such as precision and recall), metadata governance, data integrity, as well as user interface and user experience (UI/UX) quality. Although offering great potential in supporting organizational memory and decision-making, its implementation still faces severe challenges, particularly regarding low human resource readiness and user resistance, limited integration with legacy systems, inconsistencies in metadata management, and unadaptive regulations. Therefore, future research is recommended to focus on empirical validation using mixed methods, longitudinal studies on user adaptation, the integration of Generative Artificial Intelligence (AI) technologies that are secure within archival frameworks, and the development of holistic, human-centered evaluation frameworks.

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