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Original Article

The Role of Library Science in Knowledge Management

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Abstract

Library Science plays a pivotal role in the effective management of knowledge in the information age. It provides systematic methods for the collection, organization, preservation, and dissemination of information. By integrating traditional library practices with modern information technologies, Library Science supports knowledge creation, sharing, and utilization within organizations and society. The discipline also emphasizes information literacy, digital resource management, and user-centered services, which are essential for efficient Knowledge Management systems. Thus, Library Science serves as a foundation for transforming information into accessible and meaningful knowledge.

Keywords: Library Science, Knowledge Management, Information Organization, Digital Libraries, Information Literacy, Knowledge Sharing

Introduction

Knowledge Management (KM), is defined as the systematic and intentional coordination of an organization's people, technologies, processes, and organizational structure in order to improve creation, capture, sharing, and effective utilization of its knowledge assets (Muhammed Song et al., 2018). This defines the importance of library science in knowledge management since, libraries, archives, and documentation centres perform similar functions to KM (Toyese Oyedokun et al., 2018). Knowledge management involves selecting, acquiring, organizing, storing, disseminating and preserving knowledge. Knowledge management allows, need, demands, capturing tacit and explicit sources of creating knowledge to enhance relevance. The effectiveness of knowledge management depends on the type of instruction provided to individuals, contents and knowledge an organization possesses. Knowledge management is a broad and multidisciplinary area that encapsulates information science, management, computer science, economics, social science, etc.

Foundations of Knowledge Management

Knowledge management (KM) encompasses the activities of creating, collecting, organizing, sharing, and managing knowledge and the related technologies, processes, practices, and governance (Toyese Oyedokun et al., 2018). Epistemologically, KM pertains to the management of knowledge within organizations, and only the knowledge possessed and acted upon by agents is to be regarded as the knowledge of the organization; as such, a distinction is drawn between knowledge and other forms of data and information. The knowledge framework in organizations follows the data–information–knowledge–wisdom (DIKW) model, constituting a hierarchical abstraction where knowledge and wisdom presuppose the existence of data and of information (Alazie Dagnaw, 2019).

Information professionals play critical roles in KM frameworks and frameworks and governance, including through the management of both explicit and tacit knowledge across the knowledge life cycle (creation, capture, storage, sharing, and application of knowledge); the promotion of participative governance structures such as communities of practice; and the provision of KM functionality through infrastructure and delivery of services.

Integrating within existing, evolving frameworks such as knowledge ecology (creation and capture) and knowledge stewardship (maintenance and retention)

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where knowledge is framed as conceptually distant from and temporally independent of data and information extends the potential of continued, effective association between library science and KM.

Librarianship as a Knowledge Management Practice

In the knowledge management (KM) literature, libraries consistently occupy a central position, whether explicitly cited or not. KM operations map well to librarians' function: gathering, curating, and granting access to knowledge. Further delineation of how librarianship supports KM has emerged, generating descriptions of library-driven KM initiatives in specific organizations. Setting a definitive scope proves challenging in this vast area Müller (2008) traces well-supported contributions branching into community establishment, the quest for knowledge, repository implementation, educational roles, and beyond. Closely aligning with these activities, librarianship remains investment-worthy within KM projects. Acknowledging the multi-dimensional support offered, library KM initiatives undergo characterization at strategic, procedural, and technological tiers (Toyese Oyedokun et al., 2018).

Amongst contracted definitions, a frequently cited representation identifies core KM functions: generating, capturing, sharing, and employing knowledge. Librarianship manifests particularly at the capture, sharing, and application stages. Working with non-routine knowledge (understanding specific to contexts) alongside standard, case-relevant expertise and external support favoring ongoing task completion, librarians underscore the importance of managing existing knowledge for reuse and facilitating access to individuals and systems. Within very large and established organizations, managing and preserving prior experience and insight proves crucial for efficient adaptation to constant change and continuous innovation. Addressing the substantial capture gap in current KM lifecycles, capture initiatives receiving high visibility emerge as potentially appealing engagement points.

Information Organization and Retrieval

Knowledge resides primarily in documents and other media; hence the organization of knowledge resides in the organization of documents, audiovisuals, and structured data. Knowledge or data-enabling activities (i.e., knowledge acquisition, storage, sharing, defense, and consequent innovations, e.g., knowledge-based growth) depend on capital acquisition, hence the focus on capital policy (G. Raghava Rao, 2017). KM includes knowledge organization to make knowledge available, meaning that KM and libraries interact at a knowledge organization level. KM also emphasizes retrieval schemes, so the organization of retrieval/ search schemes also gains attention—search schemes include search knowledge-organization schemes, knowledge-based search schemes, document-identification schemes, etc. Knowledge-enabling activities also include knowledge-based acquisition, which is the focus of librarian resources in MSR (G. Raghava Rao, 2017).

Current KM theory indicates the organization of documents, archives, and repositories. Knowledge organization depends on the amount of media, the form of media, or the integration of knowledge-based searches. Consequently, KM relevance emerges at the establishment of library organization, document-capture criteria, and the retention/non-retention for KM.

Metadata, Standards, and Interoperability

Metadata provides content description for objects, serves as a means of intellectual control, and transmits information about objects. Metadata is essential for locating, managing, and determining the fitness for use of digital objects. Metadata comprises elements that describe objects, object attributes, relationships, and rights and legal restrictions. Metadata creation begins with gathering and encoding descriptive elements from community- or discipline-specific standards before proceeding to access and rights elements. Knowledge data structures inform relevant object characteristics, guiding the different audience needs addressed by formal, informal, and semi-formal approaches. Finding aids offer structured metadata but fall short of full representation. XML acts as a base standard for machine-readable data, while Dublin Core and MARC form the dual building blocks within library domains. The range of capable schema on offer suggests narrower designs would be inappropriate given multiple disciplines and formats. The dissemination of assorted metadata structures thus contributes to information resource deployment in libraries, archives, museums, and schools (Deng, 2018). Metadata quality, provenance, and rights management require consideration from the outset. The creation and dissemination process represents a centrepiece in information technology and data science. Clearly-articulated guidance clarifies metadata needs in many domains. The possibility of digital objects crossing subject areas exposes fragile consensus (Calhoun, 2004).

Digital Repositories and Scholarly Communication

Digital repositories support scholarly communication by enabling the creation,

distribution, and preservation of digital knowledge and artistic output for research and teaching. The domain embraces open access initiatives, digital scholarship, open data, open science, and e-research, collectively seeking to provide full-cycle support for research, learning, and teaching. Efforts focus on policy development, research data sharing, and open-access publishing. New organizational units, roles, and physical spaces dedicated to digital scholarship have emerged globally alongside these developments. The field intersects with information literacy, copyright, data literacy, and digital literacies. Key activities encompass publication, curation, evaluation, and policy compliance, while associated services cover open-access publishing, digital preservation, research data management, and the development of digital tools.

Repositories enable multiple systems and formats, including institutional repositories (for organizational records, data, or publications), subject repositories (for domain-specific data or publications), and data repositories (for research data). Alongside open-access publishing, repositories facilitate active participation in scholarly messaging through the provision of metadata and the indication of electronic availability. Repositories alleviate institutional obligations to preserve legacy publications from external (centralized) systems by either ingesting the items or retaining only the metadata. They encompass multiple preservation strategies, such as the maintenance of bitstream integrity, format migration for media and documents at risk, and policy-based curation, including mass transfers to domain repositories at the end of a project. Governance reflects the repository's essential nature. Within the information-systems paradigm, the repository embodies a knowledge-management and knowledge-sharing capability as well as a storage facility. Governance therefore encompasses strategic directions, content-repository capabilities, and the feed/usage environment (E. Lucier, 1992). Policy development and governance structures facilitate the resolution of deposit and preservation issues, while metadata guidance assists with discovery and ongoing scholarly engagement (Rosenblum, 2008).

Data Curation, Preservation, and Access

Data curation encompasses a lifecycle of activities for managing data to ensure its usefulness over time and to enhance the current state and integrity of data objects. These activities, according to the Digital Curation Centre, include data accession, description, preservation planning, data quality assurance, preservation metadata and provenance documentation, and maintenance of documentation and support information (Toups & J Hughes, 2013). Curation activities are complemented by facility representation, discovery service participation, and reinforcement of documentation, quality, and preservation to support reusability, reproducibility, and knowledge continuity (L. Palmer et al., 2008). Closely related, the accreditation and credentialing of research data products, methods and techniques, and models and simulations through matching-metadata services likewise inform the data curation lifecycle and preservation planning. The preparation of data for use and sharing impacts the quality of datasets, and preparation guidance concentrates on datasets versus other digital objects, even though the curation and publication of non-data digital objects can also advance research and scholarship.

Access control, privacy concerns, and ethical issues are critical factors in data sharing through repositories and data platforms. The application of a broadly applied access control mechanism for all data sets can enable participation and compliance with agreements, policies, and mandates; refinement in accord with group and project requirements provides added flexibility and capability. Attention to privacy obligations and restrictions at institutional, project, and individual levels further reinforces compliance. A detailed consideration of ethical aspects of data sharing additionally adds value and safeguards potential misuse of data beyond privacy violations. Likewise, research-data policies and procedures should address all ethical aspects associated with the application of shared datasets, rather than solely on the projected sharing of data for practical purposes.

Knowledge Discovery, Data Analytics, and Decision Support

Knowledge management (KM) impacts library services, including knowledge discovery and decision support. Links between knowledge management and discovery tools, DATA MINING, and data analytics are reflected in KM and discovery tools, DATA MINING, and analytics objects. Other interactions within library ecosystems are GENERAL MOTORS. Decision-support workflows sustaining KM-enabled decisions can be clustered into: data collection, curation, and analysis; object preparation for appraisal and governance; metadata generation; and provision of information and analysis.

Metrics and impact assessments addressing questions such as the following are relevant to KM-enabled decisions: Which tools, packages, programs, or workflows are most useful? What objects, libraries, or combinations have been at the forefront of the library community? What data/resources have been needed for user interests

to be met? How frequently are data/documents collected? How closely related are objects in different types? How closely related are objects across types? Have license or access issues presented obstacles? Which users are active and indeed much utilized? Who has truly been engaged? How long do objects remain dormant? How have documents generated interest over time? How have earlier objects or programs influenced later interactions? Tracking questions and developing aligned indicator-sets support assessment (Alazie Dagnaw, 2019) , (Toyese Oyedokun et al., 2018).

User Services, Information Literacy, and Outreach

Information literacy is the ability to recognize a need for information, to identify, locate, evaluate, and effectively and responsibly use that needed information (User Services and Instruction Committee, 2020). Librarians teach information literacy as a core competency in support of academic success, lifelong learning, and informed citizenship. Proficiencies targeted in instructional sessions include formulating focused research questions; developing effective search strategies and criteria for evaluating information; synthesizing and ethically using resources; and referencing appropriately (Alazie Dagnaw, 2019). Sessions typically draw from established frameworks or standards such as the ACRL Framework for Information Literacy for Higher Education (Association of College and Research Libraries (ACRL), 2016) and the K-12 Information Literacy Standards (American Association of School Librarians, 2007) (A. Bartlett, 2016). In addition to localized instruction, librarians extend outreach efforts in partnership with other campus offices and staff through workshops on topics such as copyright, image manipulation, personal digital archiving, and grant-writing(best-practices) of use. Learning analytics projects examine patterns in user engagement for individual departments or course instructors, offering a basis for data-driven decision-making and improved curriculum design—contributing vital perspectives to institution-wide conversations and communications concerning both analytics and evidence-based processes.

Governance, Policy, and Ethics in Knowledge Management

Organizations adopt knowledge management (KM) to create, capture, share, and utilize knowledge for sustained competitive advantage (Toyese Oyedokun et al., 2018). KM governance defines structures, roles, and responsibilities for overseeing knowledge assets throughout their life cycles. Librarians are frequently called upon to support KM governance by helping to specify KM policies and ensuring compliance with them.

Librarianship and KM are closely aligned, addressing complementary concerns within organizations (Tardis, 2013). KM policies clarify organizational assets—knowledge artifacts and their metadata, expertise, and more—along with rights to use them. KM governance thus includes the development of policies to guide the collection and dissemination of knowledge, ranging from explicit knowledge actively documented to tacit knowledge captured via informal conversations or curated blogs.

Case Studies: Library Science in Knowledge Management Initiatives

Knowledge management (KM) is the collection of processes and technologies through which organizations generate value from their intellectual and social capital. Although KM applies to tacit and explicit knowledge, the processes involved with externalization and formalization of tacit knowledge remain poorly understood. Libraries and librarianship have long been recognised for their intermediary role during formalization underpinning scholarly communication, yet their tacit knowledge and social capital roles through curatorial KM have been overlooked. Librarianship frames a distinctive knowledge milieu, with strategic attention centred on tacit knowledge, organizational learning, and social networks guiding formulating, receiving, and considering approaches of strategic and analytical KM discussions. KM has attracted renewed global attention, notably by intergovernmental and international organizations, emphasizing educational, cultural, scientific, and technological endeavors to support viability, prosperity, and enduring peace. Academic and research libraries remain central in KM fostering support for knowledge cultures throughout institutions. KM reflects increased focus on safeguarding sustainable growth of data, informational, and knowledge capital, further qualifying libraries as critical enablers.

Governments rely heavily on KM to strengthen and enrich science-based decisions, policies, practices, and services within libraries. Public drive toward open availability, unrestricted reuse, shared understanding, and community-wide plan generation is supported amid knowledge retention, cultural understanding, and conflict-free activities. Building such rich tapestry of rights, usages, and community integration highlights libraries' pivotal position for facilitating vital components that foster long-term viability,

preservation, diffusion, and durability of societal knowledge odyssey and heritage. Competitor libraries equipped with diverse specialties are fiercely vying, hence ensuring close monitoring unimpaired throughout the knowledge horizon encompassing simultaneously external, organizational, and internal knowledge unions is essential to ensure enduring balance. Knowledge management represents a cyclical iterative technique guiding progressive planning phases open for continual enhancement.

Challenges and Opportunities

Numerous challenges impede the establishment of effective KM in many organizations. A survey on barriers to KM indicates funding scarcity, fragmentation of user communities and km-related activities, and inadequate metadata as major obstacles (Abdullah Yaacob et al., 2010). A nationwide investigation of 40 academic libraries in Nigeria revealed that silo mind-sets toward information resources, especially non-printed materials, hindered the systematic management of scholarly content across the institution (Toyese Oyedokun et al., 2018). Several strategies may be employed to counter these concerns: adopting common standards for the description and access of repository content; pursuing collaborative initiatives with other members of the academic community; and investing in the continuous professional development of information specialists.

In addition to addressing existing hindrances, the emergence of new technologies and methods provides exciting possibilities. AI-driven curation tools promise to assist in the discovery and organization of knowledge resources. Semantically-enhanced search engines enable knowledge retrieval based not solely on keywords but also on concepts. The rising interest in open science fosters a desire to widen access to the outputs of research and scholarship. KMs stand to benefit from the many innovations connected to these developments.

Future Directions

The accelerating pace of change—the digital revolution, globalization, the information fog of war, ubiquitous social networking, shifts in the workforce fueled by econometric analysis of institutional productivity and effectiveness—constitutes a crisis that creates opportunities for libraries to act as change agents and secure their relevance in organizational workplaces. Society will require places, services, skills, and content to accelerate innovation cycles, preserve organizational memory, protect intellectual property, and capture, curate, and disseminate the full spectrum of tacit and explicit institutional knowledge. The knowledge management (KM) movement is a response to this crisis. Painfully aware of library backsliding since the high-water mark of the 1970s, and peering through the fog of war created by perceived overproduction and obsolescing resources, some libraries, librarians, and library organizations (particularly regional library systems and cooperative organizations) have embraced KM principles and practices and actively pursued KM educational opportunities to help refocus their positioning for relevance and risk mitigation. Yet this movement remains fragmented and ill-defined (Toyese Oyedokun et al., 2018).

Library science's contributions to KM have intensified dramatically in the last decade as social media have enabled libraries to share their integration of KM explicitly and on a broader platform (Alazie Dagnaw, 2019). Changes spawned by social media create environmental conditions conducive to periodic large-scale disruptions, presenting a unique opportunity for libraries to step into the breach and win organizational confidence and support. Individual libraries take different paths through the KM landscape based on their institutional mandate, governance structure, funding base, and clientele. So library science shares KM principles and frameworks that help patrons make better decisions in their own KM journey and advance and promote organizational effectiveness more generally. Libraries' considerable knowledge of KM and deep engagement with the phenomenon position library science as a logical and relevant domain to address these library-based, institution-driven KM initiatives. Dramatic, disruptive change creates textbooks, educational programs, specialized consultancies, descriptive models, practical templates, computer-based environments, training programs, and reports planned to teach both siloed institutional disciplines and interacted multidisciplinary environments. Holding true to their core organizational purpose—to facilitate exploration and discovery; assist scholarship, learning, teaching, extension, and practice; and enable transformative engagement for societal benefit—libraries become organizational connectors outside their silos and intermediaries across their many diverse language communities. Staff mainstream customized KM support offerings and coordinate KM-centered, multi- discipline, multi-convenor experts on systems design and compliance models (KM; KM2; knowledge repository systems; collection decision-making analysis; open access; policy development; intellectual property; plan assessment; systematic reviews; dataverse; pre-print server; community

engagement; scholarly communication; research metrics; continuous data-driven decision-making; descriptive and intertextual extractions; secondary research; or visualization) to assist patrons in fulfilling multiple KM objectives (scientific data; indigenous engagement; mapping; monitoring; open materials; parliamentary; parties); and to advance alternative transformation and societal purpose objectives (crowdsourcing; datasets for policy application; disaster prevention models; emerging issue detection; impact of political decision-making; injection point identification; local delivery point prediction; sectoral adjusted decision supports; and water-sharing compliance under policy settings). All libraries have updated their KM electronic records and interactive reports during the interval, communicating evolving capabilities and ideas to patrons.

Conclusion

Information management refers to policies, processes and practices instituted by an organization to manage its information. It encompasses plans and procedures governing how data is processed and used within organizations. A well-structured information management program focuses on operational data – the data generated during daily operations within the firm. Management of such information is necessary to comply with legal requirements and to improve overall service delivery process (Muhammed Song et al., 2018). Storage of organizational data is one of the most crucial activities related to information management. Information management ensures important facts and knowledge generated are not lost. Furthermore, data generated must be properly organized, tracked and protected against un-authorized access to enhance security, integrity and confidentiality of the data (Toyese Oyedokun et al., 2018). Information that is poorly managed creates inefficient processes for organizations, slowing down service delivery and hindering optimum productivity and result.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper

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